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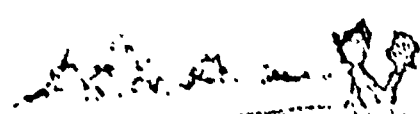
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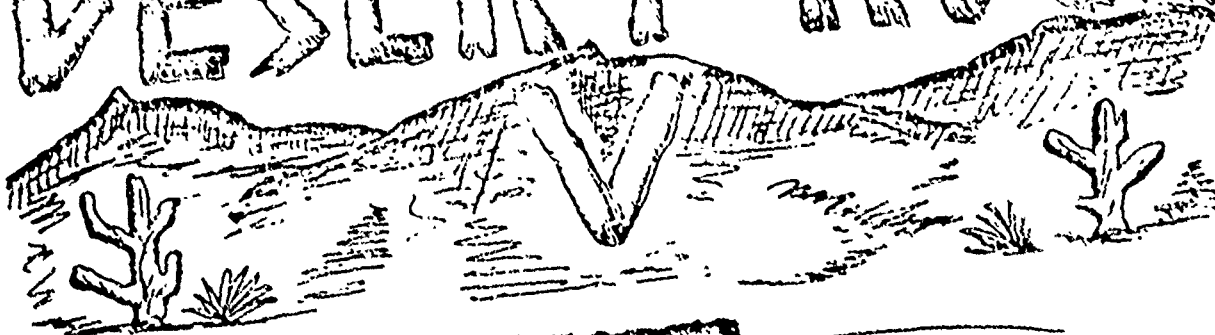
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DESERT ROCK V

TOWER SIGHT

EXERCISE

DESERT ROCK



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MILITARY RESEARCH & ANAL

ATOMIC ENERGY ACT 1946

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COMMAND AND STAFF ORGANIZATION

SIXTH ARMY COMMANDER AND EXERCISE SUPERVISOR

Lieutenant General Joseph M. Swing

CAMP COMMANDER AND EXERCISE DIRECTOR

Brigadier General William C. Bullock

DEPUTY POST COMMANDER - OPERATIONS

Colonel Edward F. Thelen

DEPUTY POST COMMANDER - ADMINISTRATION

Colonel James S. Moncrief Jr

ASSISTANT CHIEF OF STAFF, G1: Colonel Floyd A. Rutherford

ASSISTANT CHIEF OF STAFF, G2: Colonel Frederick K. Hearn

ASSISTANT CHIEF OF STAFF, G3: Lieutenant Colonel Anthony H. Shookus

ASSISTANT CHIEF OF STAFF, G4: Lieutenant Colonel Howard F. Kuenning

HEADQUARTERS COMMANDANT AND CHIEF VISITORS BUREAU:

Lieutenant Colonel Harry P. Smith

ADJUTANT GENERAL: Lieutenant Colonel Roland A. LeMay (Jan to Apr)
Major William R. MacLaren (Apr to Jun)

ARMY AIR OFFICER: Captain Daniel M. Lewis

CHEMICAL OFFICER: Colonel Roy W. Muth

JUDGE ADVOCATE: Captain George T. Foresell Jr (Feb to Apr)
Captain Robert R. Bowen (Apr to Jun)

ORDNANCE OFFICER: Captain Roy C. Petty (Jan to Mar)
Lieutenant Colonel John D. Bowersock (Mar to Jun)

POST ENGINEER: Lieutenant Colonel James O. Sorrell

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PUBLIC INFORMATION OFFICER: Major Boyd H. Arnold

QUARTERMASTER OFFICER: Lieutenant Colonel James H. Herndon

SIGNAL OFFICER: Lieutenant Colonel Harold L. Hayman

SPECIAL SERVICES OFFICER: Captain Duane W. Bagley

SURGEON: Lieutenant Colonel Wilbur D. Dice

TRANSPORTATION OFFICER: Major Hilary E. DuVal

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STATION LIST

STATION COMPLEMENT

6012 ARMY SERVICE UNIT (DET F)

6020 ARMY SERVICE UNIT

SUPPORT UNITS

23rd Transportation Truck Company
26th Transportation Truck Battalion (Hq & Hq Company)
31st Transportation Truck Company
38th Transportation Truck Company (Detachment)
53rd Transportation Truck Company (Detachment)
50th Chemical Service Platoon
77th Army Band
93rd Army Band
94th Medical Detachment (Vet Food Insp)
163rd Quartermaster Laundry Detachment
360th Engineer Utilities Detachment
371st Evacuation Hospital (SMBL)
412th Engineer Construction Battalion
505th Military Police Battalion (Company C)
505th Signal Service Group (Composite Company)
705th Engineer Field Maintenance Platoon
762nd Quartermaster Subsistence Supply Company
3623rd Ordnance Company

PARTICIPATING UNITS

Composite Units	First Army
Composite Units	Second Army
Composite Units	Third Army
Composite Units	Fourth Army
Composite Units	Fifth Army
Composite Units	Sixth Army
Composite Units	U.S. Air Force
U.S. Marine Corps	Provisional Atomic Exercise Brigade

Camp Desert Rock Troops

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IV. PARTICIPATION.

Military personnel participated in nine shots during Exercise DESERT ROCK V. Troop observers were included in all shots and composite Battalion Combat Teams participated in six of the nine shots.

The tactical situation assumed for troop participation was based on the concept that Aggressor airborne troops, after an initially successful attack, were now on the defensive and had established a strong position which was holding up the attack by friendly troops. Decision was made to use atomic weapons to force a breakthrough. In each case the actual burst represented one burst out of a group of 5 to 7 employed to execute the planned maneuver.

In each case ground zero was assumed to be 1,500 yards in rear of the enemy lines. Protective trenches were prepared and occupied at 3,500 to 4,000 yards from ground zero in all tower shots and at greater ranges for air dropped and artillery delivered weapons. In planning the maneuvers all tower shots, regardless of KT yield, were assumed to be artillery delivered atomic weapons.

The first atomic explosion in this series occurred on 17 March 1953. This was a tower shot which developed a yield of 16.3 KT and was followed by an attack on an objective to the left (west) of zero from trench positions 3,500 yards from ground zero. This attack was made by two Army BCT's composed of Camp Desert Rock permanent party personnel.

On 24 March two Army BCT's composed of personnel from Second, Third, Fifth, and Sixth Armies entrenched 3,000 yards from GZ attacked an objective to the west of ground zero immediately after the second atomic burst, a tower shot of 24.5 KT yield. In addition, a group of nine volunteer Army, Air Force, and Navy officers were positioned in a trench at 2,500 yards from ground zero as the first step in an experiment to determine how close personnel may be positioned to a burst without harmful effects.

There was no military participation in the third atomic detonation on 31 March 1953. The experimental device used on this occasion developed a yield of only .21 KT.

No military personnel were scheduled to observe the air drop of an atomic weapon on 6 April. However, 75 Marine Corps officers scheduled to participate in Shot V-5 took advantage of the opportunity to witness this detonation in order to be better qualified to orient their troops. They were joined by 60 officers and enlisted men of Camp Desert Rock who had not previously witnessed an atomic detonation. This weapon, yielding 10.3 KT, was detonated 6150 feet above the terrain, and was one of the most spectacular of the series.

The area to be used for Shot V-5 was contaminated by the detonation of Shot V-4. As a result Shot V-6 was advanced to 11 April. The detonation of this device, placed in a cab on a 100 foot tower and which yielded .22 KT, was witnessed by 63 observers originally scheduled to observe Shot 5 but who departed their home stations prior to receipt of the notice of the change in date.

The USMC Provisional Atomic Exercise Brigade formed into two Battalion Landing Teams totaling 2,318 officers and enlisted men, attacked toward ground zero after the detonation of Shot 5 on 11 April. In addition, a Marine Corps Helicopter Group airlifted one company to the vicinity of their objective. This weapon was placed in a cab on top of a 300 foot tower and developed a yield of 27.7 KT. A group of 6 Army and 6 Marine Corps officer volunteers were positioned in a trench 2,000 yards from ground zero to observe this burst. All withstood the atomic blast without incident.

Shot 7, the largest in the series was detonated on 25 April. This shot, an atomic device placed in a cab on top of a 300 foot tower, developed a yield of 51.5 KT. Troops from the Second, Fourth, Fifth, and Sixth Armies, organized as two BCT's attacked toward objectives to the west of ground zero immediately after the detonation. These troops were halted 2,000 yards from ground zero because of the high radiation intensity in the area. Seven Army and one Navy officer volunteers were positioned in two trenches located 2,000 yards from ground zero. No unusual effects were noted by these officers.

On 8 May, a Mark 6 stockpile weapon was air dropped and detonated at a height of 2,423 feet above the terrain. This weapon, scheduled as Shot 9, is estimated to have developed a yield of approximately 26.4 KT. Two BCT's composed of personnel from the First, Third, and Fourth Armies plus a contingent of 326 officers and enlisted men of the Air Force attacked toward ground zero immediately after the detonation. A group of 60 of these officers and enlisted men were air lifted by helicopter to a point 1,500 yards from ground zero. This group reached ground zero one hour and two minutes after the detonation occurred.

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Shot 8, which had been rescheduled because of contamination of the area, was detonated on 19 May. This device placed in a cab on top of a 300 foot tower developed an estimated yield of 34 KT. A total of 903 military personnel observed this detonation and the resulting effects on equipment, emplacements and animals.

Exercise DESERT ROCK V reached its climax with the detonation of a Mark 9 atomic shell delivered by a 260-mm artillery gun on 25 May. Two ECT's composed of troops from all the continental armies, attacked towards objectives beyond ground zero after the detonation. The Secretary of the Army, two members of Congress, the Chief of Staff of the U.S. Army, the Chief of Army Field Forces, the Commanding General of Sixth Army and 787 additional military and civilian personnel observed the detonation from positions in the troop entrenchment area.

A total of 17,696 military and civilian personnel witnessed the nine detonations in which the military participated. This total includes the Exercise DESERT ROCK Control Group which participated in all shots. All of the services were well represented throughout the series, with the total participation for each as follows:

Army	13,364
Navy & USMC	2,921
Air Force	1,273
Civilian (All services)	139

V. PSYCHOLOGICAL REACTIONS OF TROOPS AT THE DESERT ROCK V MANEUVERS.

The investigation of troop psychological reactions at the DR-V maneuvers was undertaken by Army Field Forces Human Research Unit No. 2. Research personnel from this unit were present at all shots attended by provisional battalion combat teams composed of Army personnel. The research performed was designed to accomplish the following objectives:

Observation of troop behavior in the forward trench area immediately prior to and after the detonation of an atomic device.

Measurement of changes in troop attitudes and level of information about atomic warfare before and after participation in the indoctrination and maneuver at DR-V.

Assessment of some of the factors governing the degree to which information gained and attitudes formed at DR-V by troop participants were communicated to home station troops upon return of the maneuver participants.

Obtaining reactions and opinions of a group of officers who were in a special forward volunteer group on some of the shots.

At this date only preliminary analyses have been made of the data collected at DR-V. Consequently, the findings reported here should be regarded as tentative. A final report of the psychological findings will be published under separate cover at a later date.

Preliminary findings indicate:

There was no evidence of panic or even overwhelming anxiety on the part of participating troops.

That participating troops acquired considerable information by the end of the exercise which resulted in a decrease in self-rated anxiety about the danger of injury from all the effects of an atomic burst, except radiation. However, there is little evidence that the experience of the exercise produced changes in broader attitudes about atomic warfare, troops interviewed indicating they were neither more nor less willing for the United States to use atomic weapons in Korea.

That more information is gained by participants who, at their home stations prior to departure to the exercise, participate in group discussions and are provided with lists of questions that members of the group desire answered.

That well indoctrinated officers are willing to position themselves in forward trenches located at distances they have calculated to be safe. That such officers feel that they have learned nothing new about atomic effects but by their actions have added to the confidence of participating troops in this and future exercises.

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prior to the shot. This period was limited to a description of the tactical maneuver situation for the shot, presented by the AC of S, G3, and a brief general orientation and question conducted by an instructor.

The following subjects were covered in orientations during the exercise period:

<u>SUBJECT</u>	<u>REVISED TIME</u>
Introduction and Security	30 min
Atomic Weapons Family	50 min
Characteristics and Effects of an Atomic Explosion	50 min
Medical Aspects	30 min
Protective Measures and Radiac	30 min
Army Delivery Means	40 min
Air Force Delivery Means	35 min
Navy Delivery Means	35 min
Tactical Employment	80 min
History of Desert Rock Exercises	20 min
Seminar and "TUMBLER/SNAPPER" Film	30 min

Training films concerning atomic matters were shown at night for BCT and officer personnel on a voluntary attendance basis.

The orientation periods were revised continuously as new material became available to the instructors. Lessons learned from experience and suggestions from officers operating in the field of atomic energy who attended the orientations contributed to the improvement of the orientations.

X. RADIOLOGICAL SAFETY.

The Directive for Exercise DESERT ROCK V, issued by JCAFF, made the Exercise Director solely responsible for providing radiological safety for all participants in the exercise. This marked the first time the military was given the entire responsibility for radiological safety of its personnel in maneuvers conducted in connection with an atomic burst.

The Directive provided the Exercise Director with criteria to be used in exposing participants to atomic weapons effects. These criteria provided for a maximum permissible dosage of six (6) roentgens for the exercise.

Based upon the above criteria the Rad-Safe Officer prepared an SOP for Radiological Safety covering all operations in the forward area. These procedures prescribed the use of radiac instruments and film badges, monitoring requirements and decontamination regulations.

Prior to each shot the Radiological Safety Section conducted a school for monitors selected by the participating BCT's. During the maneuver following each shot these monitors checked for nuclear radiation in the area used by their respective units. In addition, the Rad-Safe officer and his monitors surveyed the entire maneuver area, reported intensity levels to the Exercise Director, and exercised overall radiological safety control.

Prior to each shot the Rad-Safe Section placed film badges in the field fortifications located in the display area. These badges were recovered after the shot and the readings were studied to determine the radiation dosages received in the fortifications. In addition, where possible, these readings were compared with radiation effects predicted by trained staff officers.

After each shot radiological surveillance of the area was continued, decay predictions made, and a situation map showing intensity levels was maintained.

XI. PREPARATION OF MANEUVER AND DISPLAY AREAS.

The 412th Engineer Construction Battalion was assigned to Camp Desert Rock for the purpose of constructing troop trenches and preparing the display areas for Exercise DESERT ROCK V. In addition, this unit was to render engineer support, in so far as its capabilities permitted, to the Directorate of Weapons Effects Tests, AFSEP and to Camp Desert Rock.

Preparation of the Exercise DESERT ROCK V sector of each shot area required the expenditure of 26,361 man hours and 7,700 equipment hours during the period 12 January to the detonation of Shot 10 on 25 May. Approximately 10,000 feet of trenches were dug for Shot V-1, V-2, V-5, V-7, V-9, and V-10 with Shots V-6 and V-8 requiring a lesser amount.

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All display areas contained a standard layout of stakes, shallow trenches and bunkers, beginning at 500 yards from Ground Zero and at each 500 yards thereafter up to 3,500 yards. The following emplacements and stakes were placed on each 500 yard arc:

- C-1 (C-0) Stake - A 4" x 4" wooden stake, extending 2' above the ground. Fig 1 (Page 77).
- C-2 (C-5) Trench - A slit trench 4'6" long, 2' wide and 2' deep. Fig 2 (Page 77).
- C-3 (C-7) Trench - A slit trench 4' long, 3' wide and 3'6" deep. Fig 3 (Page 77).
- C-4 (C-5) Bunker - A one man covered emplacement. Fig 4 (Page 78).
- C-5 "B" Bunker - A two man covered emplacement. Fig 5 (Page 79).

In addition, deep "A" type bunkers were dug at 100, 200, and 300, and 400 yards from ground zero for Shots V-2 and V-9. Various items of military equipment were also placed in the display areas to provide visible evidence of the damage effects of atomic weapons. Sheep were placed in selected A, B, and C type emplacements. Fig 6 (Page 80).

The Engineer support rendered to AFSTP T-5T GROUP required an expenditure of 12,209 man hours and 2,318 equipment hours up to 25 May 1953. This effort was largely expended in the Frenchman Flat area.

Engineer support rendered to Camp Desert Rock for the construction of additional facilities required the expenditure of 17,929 man hours and 614 equipment hours.

The clean up of destroyed equipment in display areas for Exercise DESERT ROCK V and AFSTP will require additional effort.

Communication facilities for Exercise DESERT ROCK V were installed by Composite Company, 505th Signal Group. These facilities included telephone communication between the Control Group and the BCT Commanders, ABC Control Point, the vehicle parking areas, Camp Desert Rock and a forward line to Rad-Safe monitors. In addition, a radio net was established to duplicate the telephone system. A public address system was constructed in each trench and vehicle parking area to enable instructors to give "on site" orientation and instructions to the participants. The establishment of these communications facilities required the expenditure of 7,776 man hours and 2,340 equipment hours.

This unit also expended 10,080 man hours and 2,450 equipment hours in support of Project 3.20 (SIGNAL) in the AFSTP test area. This effort was expended in the construction of pole lines, buried lines, surface lines and construction of radio towers.

XII. VOLUNTEER OBSERVER PROGRAM.

Selected officer volunteers, capable of calculating effects of atomic weapons, were positioned in trenches at 2,500 and 2,000 yards on three shots.

Four Army, four Naval and one Air Force officer volunteers were positioned in a heavily revetted trench located 2,500 yards from ground zero on Shot V-2. For Shot V-5, the volunteer trench was located 2,000 yards from ground zero and was not revetted. This trench was occupied by 6 Army and 6 Marine Corps Officers. Two trenches, one revetted and one not revetted, located at 2,000 yards from ground zero were utilized by the volunteer officer group on Shot V-7. This group consisted of seven Army and one Naval officer.

The location of the trench in each case was based upon the determination of a safe distance by the volunteers. This distance was calculated for the criteria under which the program was established, using effects data listed in TM 23-200 dated 1 Oct 1952. These criteria, established by CCAFF, were:

- | | |
|--------------------|--|
| "Overpressure | 8 psi at ground level." |
| "Thermal | 1 cal/cm ² ." |
| "Nuclear radiation | 10 r in any one test, of which no more than 5 r is prompt, whole body radiation, and with the further limitation that no volunteer shall take more than 25 r in this series of tests." |

All calculations were based upon the above criteria and the predicted yield of the weapon to be detonated. The actual yield was less than the predicted yield for Shots V-2 and V-5, but exceeded the predicted yield of 40 KT by 25 percent on Shot V-7.

As a result of their experience these officer volunteers concluded:

That the volunteer trenches were located at a safe distance under the given conditions for each shot.

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That data in TM 23-200, dated 1 October 1952, can be used to determine safe observer positions if properly qualified officers make the computations.

That troops could have observed these shots safely from positions located in the same areas as the volunteer trenches. However, it was further concluded that troops should be placed no closer than 3,500 or 4,000 yards to ground zero in troop orientation and indoctrination exercises, such as Exercise DESERT ROCK V, for the following reasons:

Troops can feel the effects of the detonation at those distances as well as they could at a closer point.

Troops can better observe the fireball and mushroom cloud at those distances.

Troops are sufficiently removed from the heavy dust cloud and possible radiation hazard.

Reduction of the distance between ground zero and the troop entrenchment area below 3,500 to 4,000 yards reduces the area available for troop maneuvers.

That a trench six feet deep and unrevetted gave adequate protection under the given conditions.

That there was no discomfort from blast or thermal effects.

That ground shock, at this distance, is not of sufficient magnitude to be of any concern.

That the existing volunteer program, with its present mission and limiting criteria, has served its purpose and should be discontinued.

That a volunteer program of this type, with a mission of indoctrination for personnel having special weapons training or assignments with special weapons programs, would be worthwhile.

That future volunteer programs would have greater value if volunteers were positioned in a variety of standard field fortifications and combat vehicles approximating actual combat conditions.

That instrumentation placed in trenches to record pressures, heat, ground shock, and nuclear radiation would be of assistance in evaluating observers' reactions.

Study of the results of the volunteer program must be done with great care. Readers are cautioned to remember that all shots in which volunteers participated were tower shots. Different information might result if a similar program were undertaken for shots in which the detonation took place considerably higher than the 300 foot height of the tower used in these shots.

XIII. CONCLUSIONS.

From experience gained in Exercise DESERT ROCK V it is concluded:

That the overpressure and thermal radiation criteria used in determining troops positions for this exercise are sound and should be followed in future exercises.

That the criteria for nuclear radiation to be accepted should be increased to permit maneuver closer to ground zero than was possible in this exercise. The amount of increase should be determined by observation of the volunteer officers who accepted larger dosages than permitted for troop participants.

That the criteria for distances between ground zero and the troop trenches used in this exercise are sound and should be retained in future exercises.

That a volunteer program which would permit officers trained in special weapons or assigned to special weapons programs to be positioned in trenches closer to ground zero than the participating troops would be worthwhile for indoctrinating such officers in atomic weapons effects.

That atomic weapons effects data found in TM 23-200, dated 1 October 1952, can be used by qualified officers to determine safe troop positions and to predict damage to equipment, emplacements and personnel as the result of an atomic weapon detonation.

That indoctrinated soldiers show no evidence of fear of an atomic detonation and will willingly attack objectives at or near ground zero.

That continued detonation of atomic weapons over the same flat terrain found in the Yucca and

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Frenchman Flats of the Nevada Proving Ground precludes the obtaining of valuable data on the effects of atomic weapons detonated in rough terrain and under other than ideal conditions.

That improved military participation could be obtained by more direct contact between the Exercise Director and the Test Manager, AEC Nevada Proving Ground, rather than the Exercise Director being required to communicate through AFSTF to the Test Manager. X

That emphasis in future atomic weapons tests should be placed upon tactical operations rather than weapons effects in order to increase our knowledge of the tactical employment of nuclear weapons. Although a great deal of theoretical work has been done on the tactical employment of nuclear weapons, a great deal remains to be done. Ultimately, and with as little delay as possible, armored and infantry divisions should attack behind multiple atomic detonations which have been incorporated into a fire plan involving all of the conventional weapons. A vast amount of data is presently available on weapons effects. X

That the assignment of a photodosimetry team and laboratory to Camp Desert Rock would have made more accurate and complete Rad-Safe operations in Exercise DESERT ROCK V. X

That dependence upon Camp Mercury sources for photographic coverage of Exercise DESERT ROCK V is unsatisfactory. X

IV. RECOMMENDATIONS.

To improve future Exercises DESERT ROCK, it is recommended:

That the overpressure and thermal criteria used in this exercise be retained.

That the nuclear radiation tolerances be increased to permit maneuver closer to ground zero.

That troops entrenching positions be located no closer to ground zero than 3,500 to 4,000 yards. |

That future exercises of this type include a volunteer observer program with a mission of indoctrination for officers having special weapons training or assignments in special weapons programs, and that such a program be expanded to include larger numbers and less stringent prerequisites for participants.

That future exercises include attacks against fortified positions located in rough terrain, utilizing stockpile weapons that would be used under similar conditions in combat where possible. |?

That future exercises employ standard atomic weapons under adverse weather conditions to determine the effectiveness of these weapons under such weather conditions from offensive and defensive points of view. |?

That Department of the Army obtain the necessary authority to secure and utilize limited numbers of stockpile weapons in exercises for which it is completely responsible and which are free from artificial test detonations, equipment and electronic measuring devices. |

That planning be started for a large scale exercise, employing two or more divisions attacking a simulated enemy after detonations of multiple burst of stockpile weapons and in conjunction with the coordinated fire of conventional weapons. ? |

That the Department of Defense take steps to have greater emphasis placed upon tactical operations and troop participation in any future test series scheduled by the AEC. ? |

That the Exercise Director for future exercises DESERT ROCK be made a deputy to the Test Manager in order to have direct contact on all matters pertaining to troop participation and tactical operations. ✓

That steps be taken to obtain items of display equipment through technical service channels at least 4 months prior to the first shot.

That the quotas for troop observers and BCT's be held at the same level as quotas for Exercise DESERT ROCK V; that is, a maximum of 600 troop observers and two (2) BCT's with a strength of 1,200 each.

That in future exercises a photodosimetry team and laboratory be assigned to Camp Desert Rock.

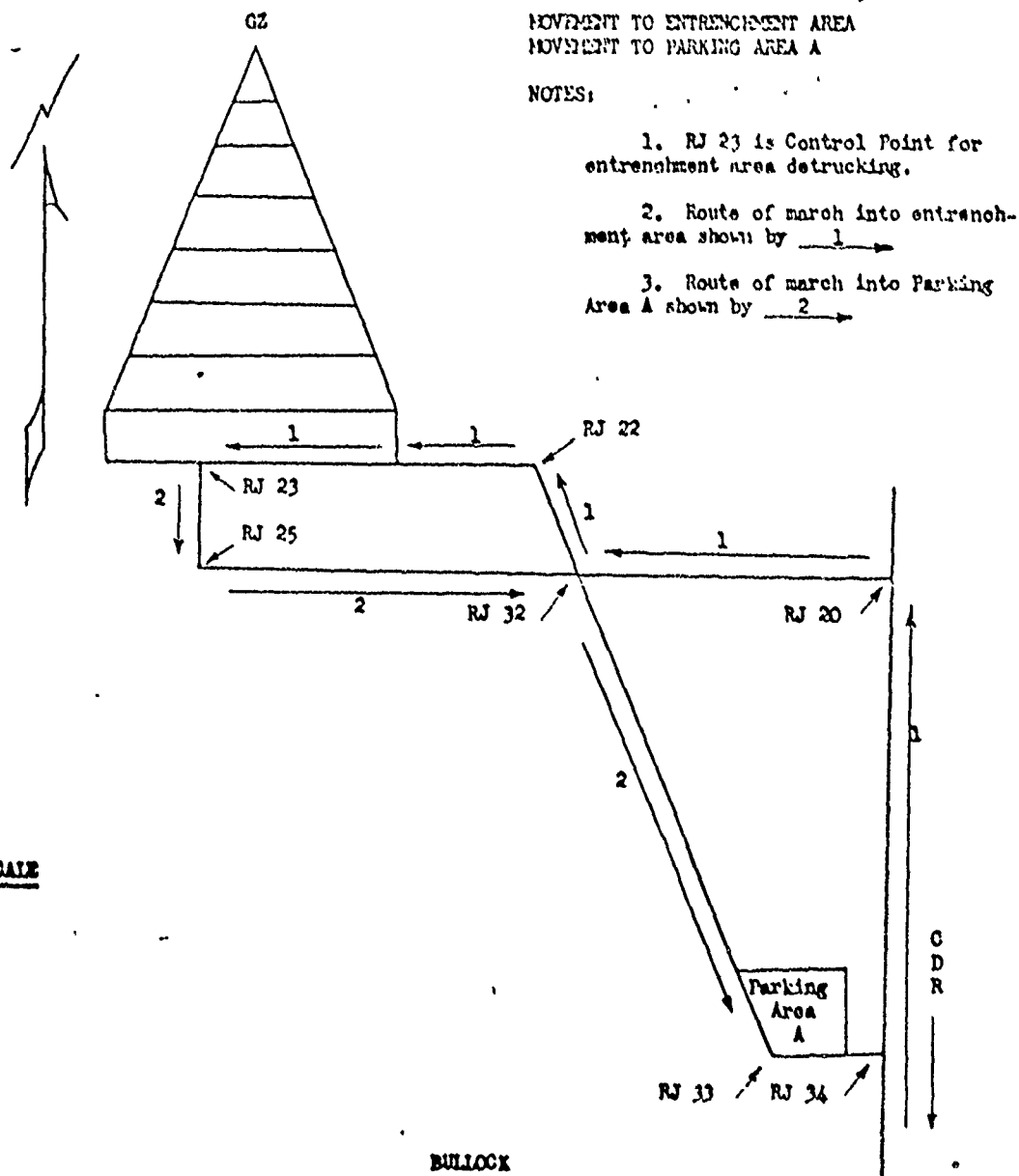
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That steps be taken to obtain AEC permission for Camp Desert Rock photographers to cover Exercise DESERT ROCK activities within the Nevada Proving Ground, with the complete understanding that all photographs will be developed and classified within the Nevada Proving Ground and in conjunction with AEC personnel.

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HQ CAMP DESERT ROCK
LAS VEGAS (872536) NEV
211200 April 1953

Appendix A (TRAFFIC CIRCULATION) to Annex 4 (Schedule of Events) to Opn O 4
EXERCISE DESERT ROCK V



MOVEMENT TO ENTRENCHMENT AREA
MOVEMENT TO PARKING AREA A

NOTES:

1. RJ 23 is Control Point for entrenchment area detrucking.
2. Route of march into entrenchment area shown by 1
3. Route of march into Parking Area A shown by 2

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BULLOCK
Brig Gen

OFFICIAL:

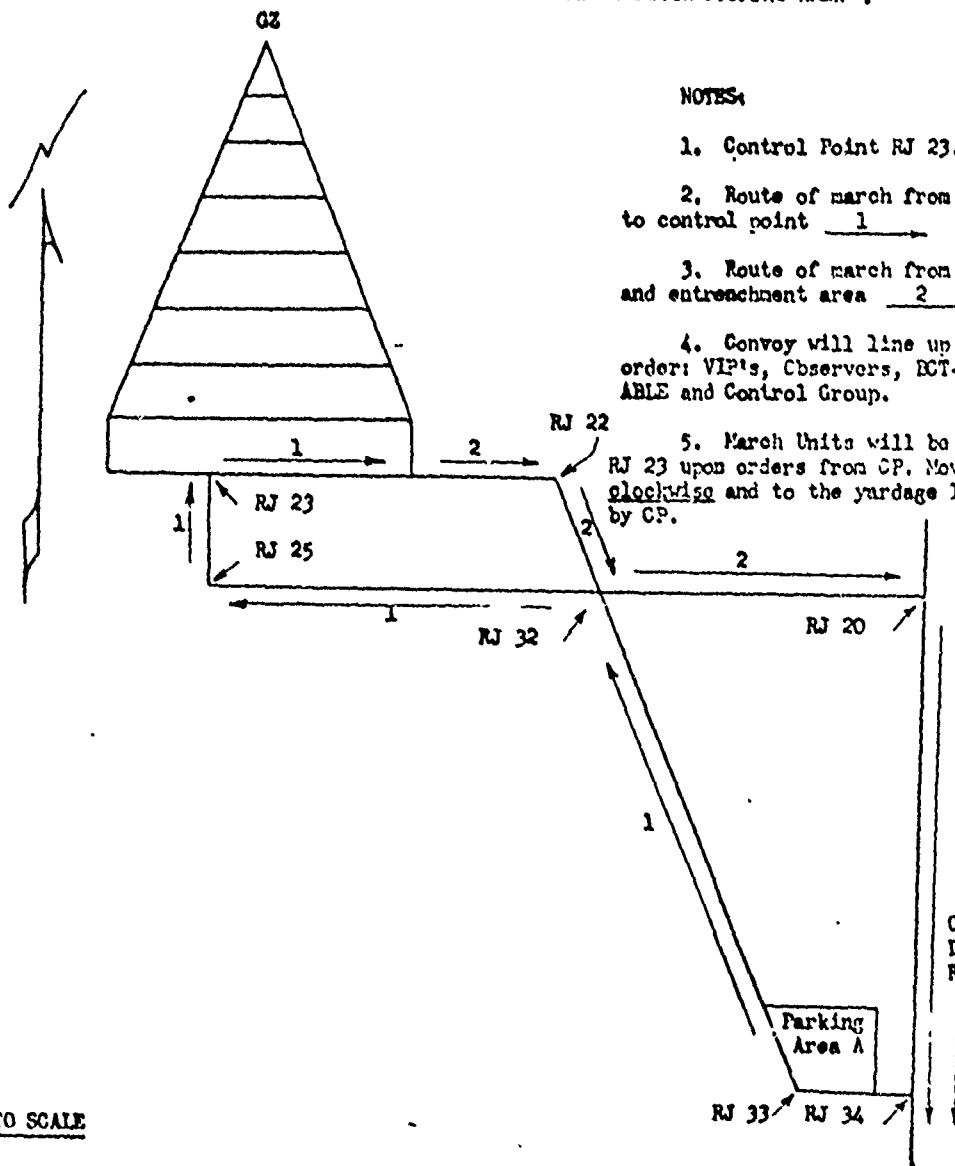
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SHOOK
G 3

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HQ CAMP DESERT ROCK
LAS VEGAS (872536) NEV
211200 Apr 11 1953

Appendix B (TRAFFIC CIRCULATION) to Annex 4 (Schedule of Events) to Opn O 4
EXERCISE DESERT ROCK V

LOCATION OF VEHICLES AND EXIT ROUTES
FOLLOWING WALK THROUGH DISPLAY AREA .



NOTES:

1. Control Point RJ 23.
2. Route of march from parking Area A to control point 1
3. Route of march from display area and entrenchment area 2
4. Convoy will line up in the following order: VIP's, Observers, BCT-BANNER, BCT-ABLE and Control Group.
5. March Units will be dispatched from RJ 23 upon orders from CP. Movement will be clockwise and to the yardage line indicated by CP.

NOT TO SCALE

OFFICIAL:

Shookus
SHOOKUS
O 3

36

BULLOCK
Brig Gen

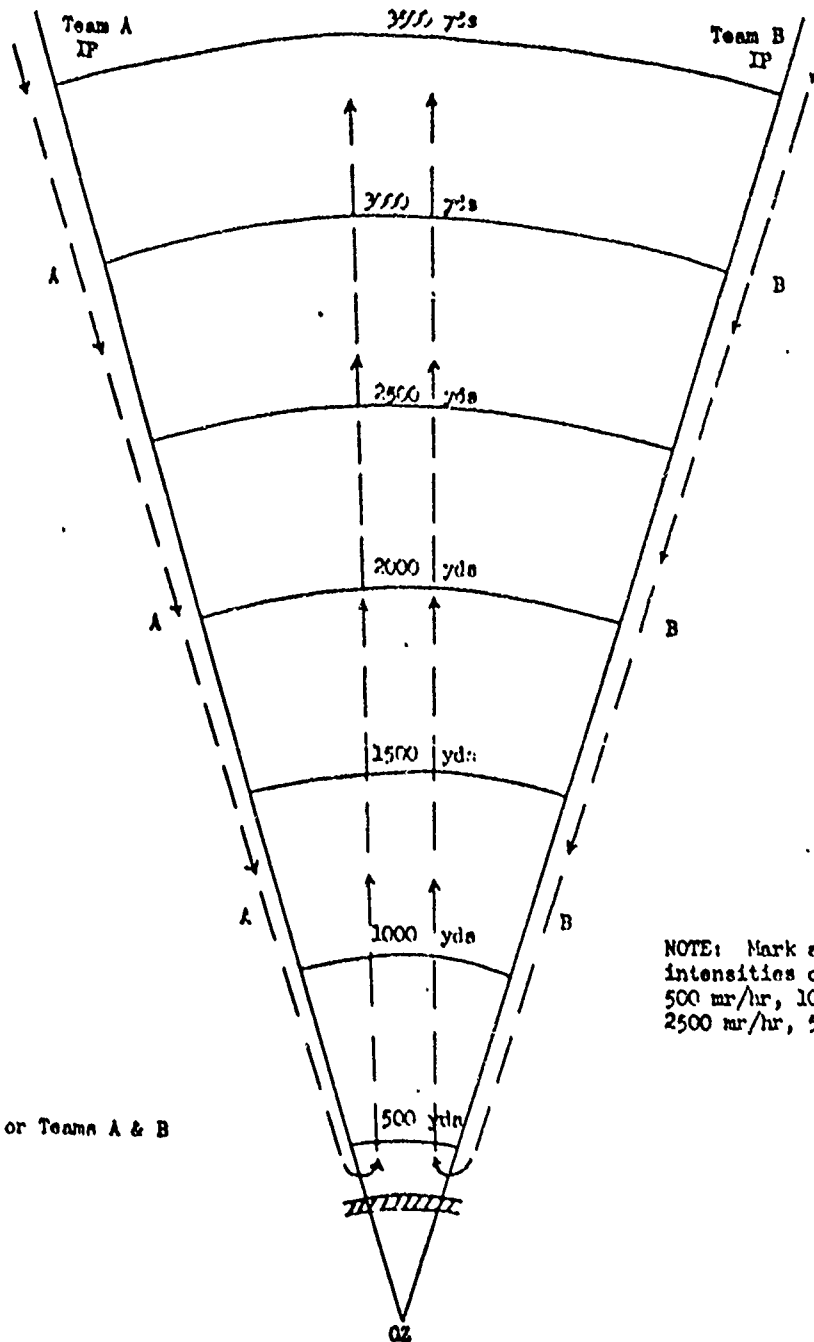
23

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SECURITY INFORMATION

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ATOMIC ENERGY ACT 1946

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SECURITY INFORMATION

Appendix A (ROUTE OF MONITOR TEAMS) to Annex 7 (Rad-Safe) to Opm 0 4
EXERCISE DESERT ROCK V



NOTE: Mark and report intensities of 10 mr/hr, 500 mr/hr, 1000 mr/hr, 2500 mr/hr, 5000 mr/hr

Route of Monitor Teams A & B

DISTRIBUTION: Special

OFFICIAL:

Shookus
SIXOKIS
0 3

58

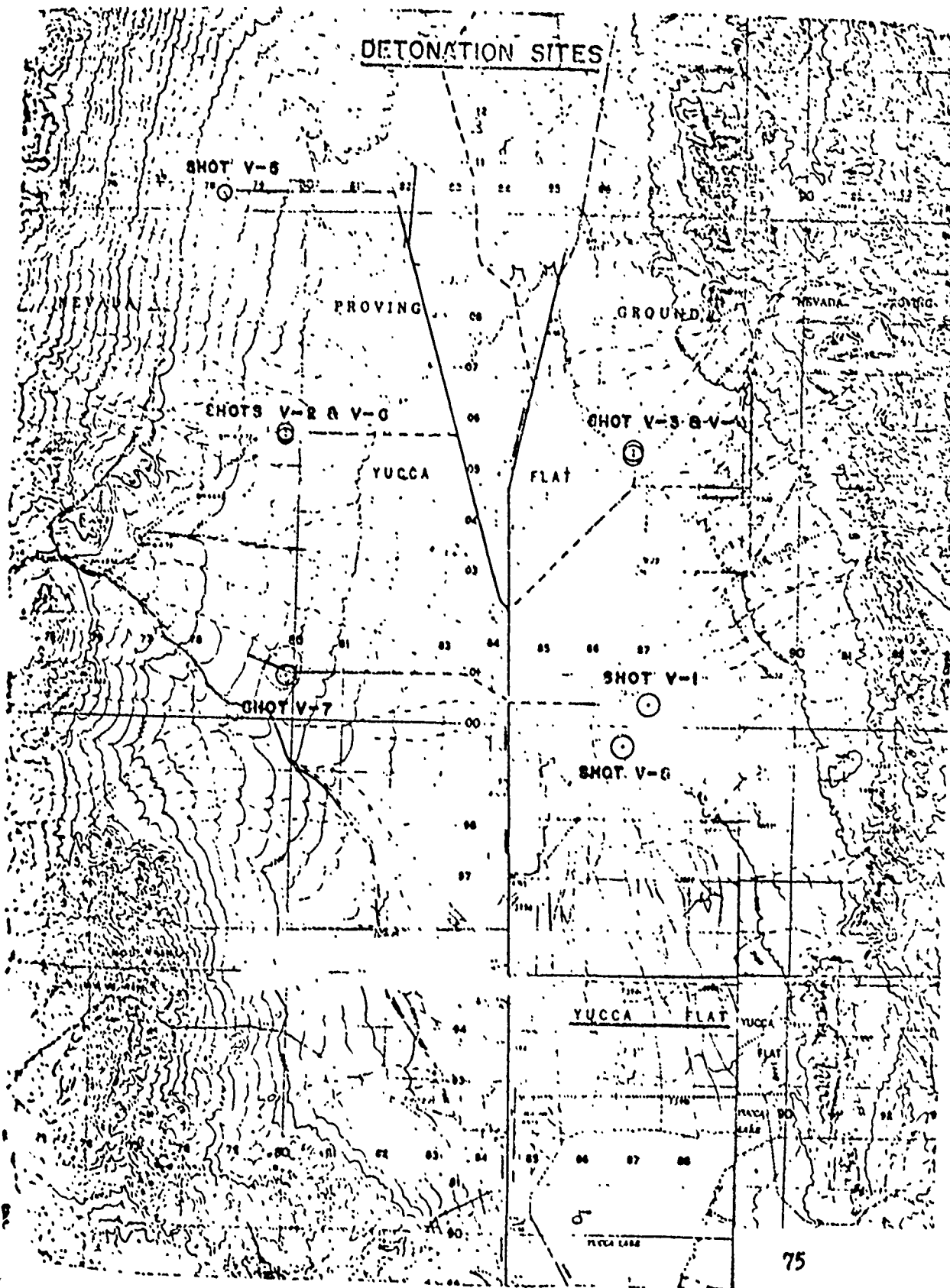
24

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SECURITY INFORMATION

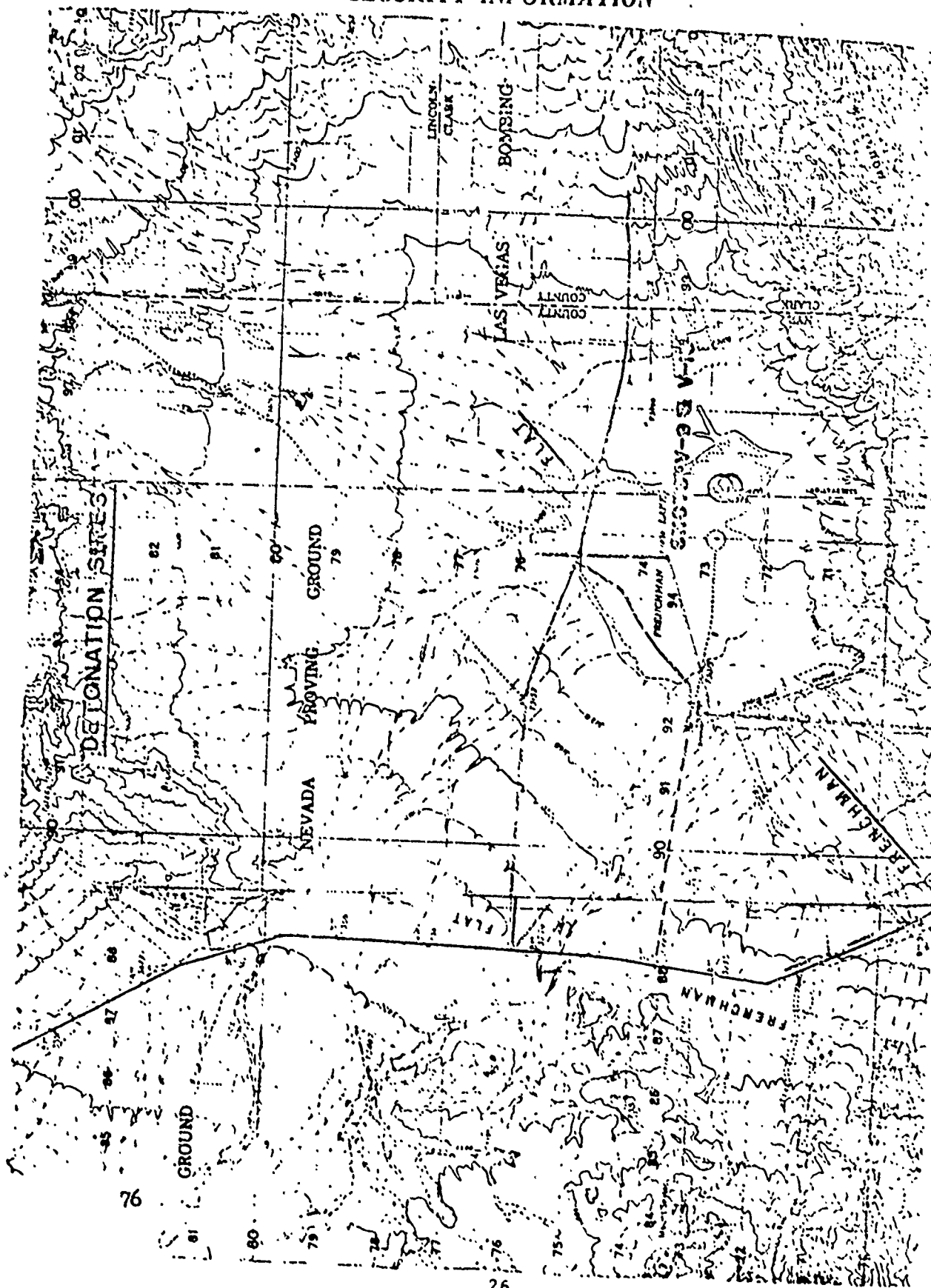
BULLOCK
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ATOMIC ENERGY ACT 1946

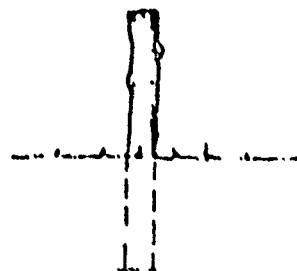
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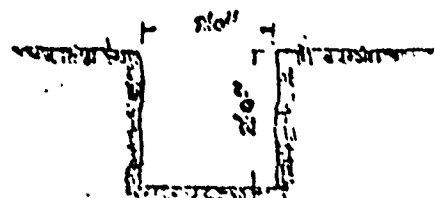


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SECURITY INFORMATION



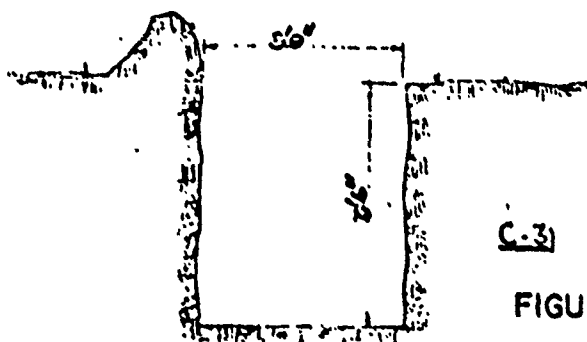
C-1 WOODEN STAKE

FIGURE 1



C-2 4' x 4' LONG

FIGURE 2

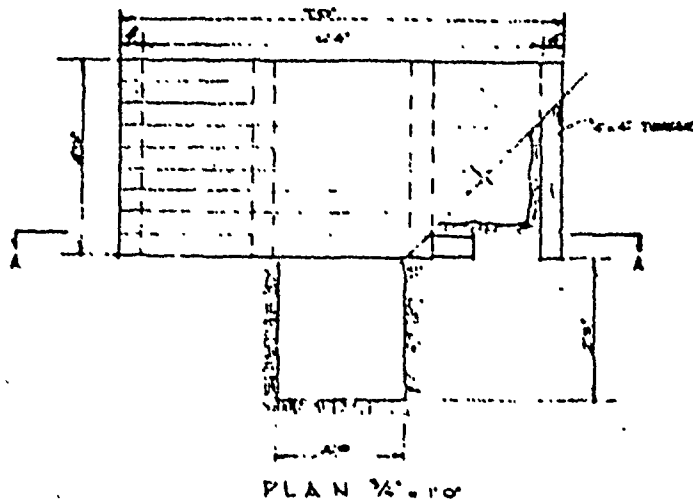


C-3 4' x 0' LONG

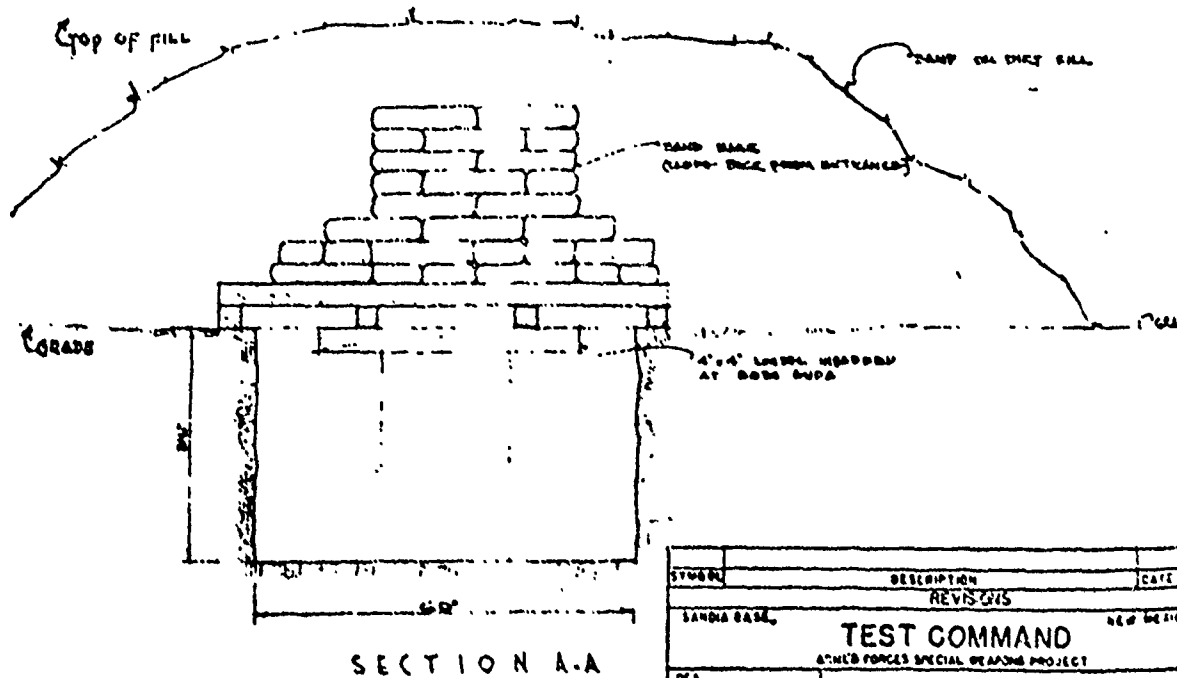
FIGURE 3

SYMBOL		DESCRIPTION		DATE	APPROVAL
REVISIONS					
SANDIA BASE,		TEST COMMAND		NEW MEXICO	
ARMED FORCES SPECIAL WEAPONS PROJECT					
DES		SIXTH ARMY EMPLACEMENTS DRAWINGS NO. C-1, C-2, C-3			
DIR	IN				
CHR					
LOH					
SUPV					
HEAD					
WER					
EMER					
PROJ					
MONIT					
APPROVED		FOR THE COMMANDER		DATE	
DIRECTOR		SCALE		SPEC	
SATISFACTORY TO		SHEET 1 OF 1		77	
DATE		EG DRAWING NO.			

~~RESTRICTED DATA~~
SECURITY INFORMATION

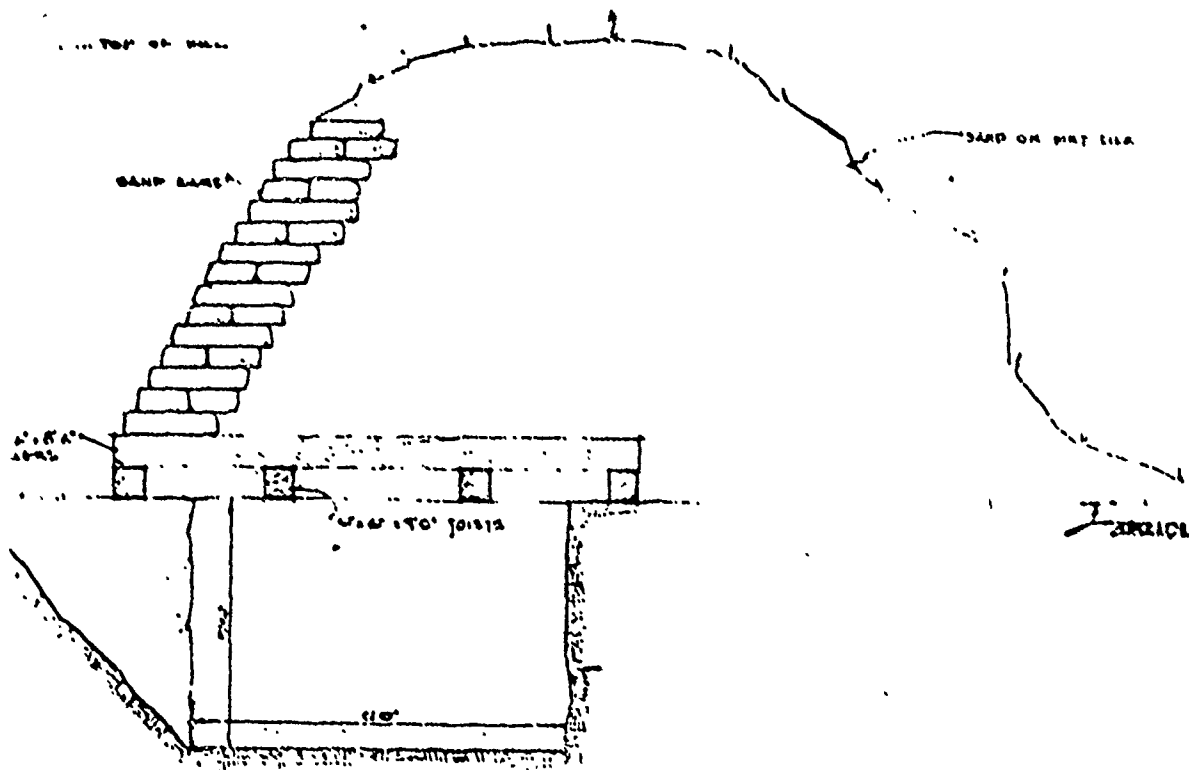


C-4
FIGURE 4

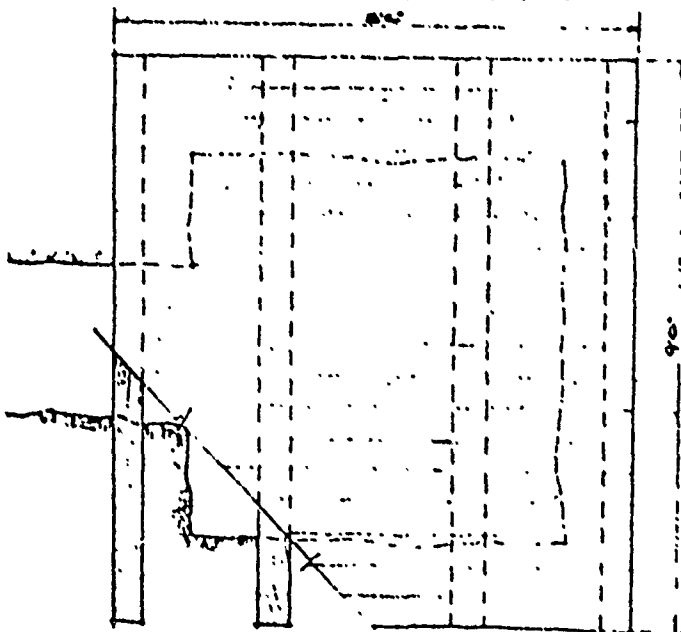


STUDY	DESCRIPTION	DATE
REVISIONS		
SANDHIA BASE	TEST COMMAND	NEW MEXICO
ARMED FORCES SPECIAL WEAPONS PROJECT		
DESIGN	SIXTH ARMY	
FROM 10	EMPLACEMENTS	
FOR	DRAWINGS NO. XXXXXXXXXX C-4	
CON	APPROVED _____ DATE _____	
FOR	FOR THE COMMANDER	
DESIGN	SCALE	TIME
FOR	SHEET 1 OF 1	
FOR	DRAWING NO.	

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SECURITY INFORMATION



SECTION 4' x 10'



PLAN 4' x 10'

EMPLACEMENT
'B'
C-5

FIGURE 5

SYMBOL	DESCRIPTION	DATE	APPROVED
REVISIONS			
SAND BAR, TEST COMMAND		NEW MEXICO	
SAND BAR SPECIAL WEAPONS PROJECT			
NO.	TO	SIXTH ARMY EMPLACEMENTS	
1	1	EMPLACEMENT "B"	
2	2	DRAWING "B"	
3	3	APPROVED FOR THE COMMAND	
4	4	SCALE	
5	5	SHEET 1 of 1	
6	6	DATE	
7	7	TIME	
8	8	SHEET 1 of 1	

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ATOMIC ENERGY ACT 1946

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SECURITY INFORMATION

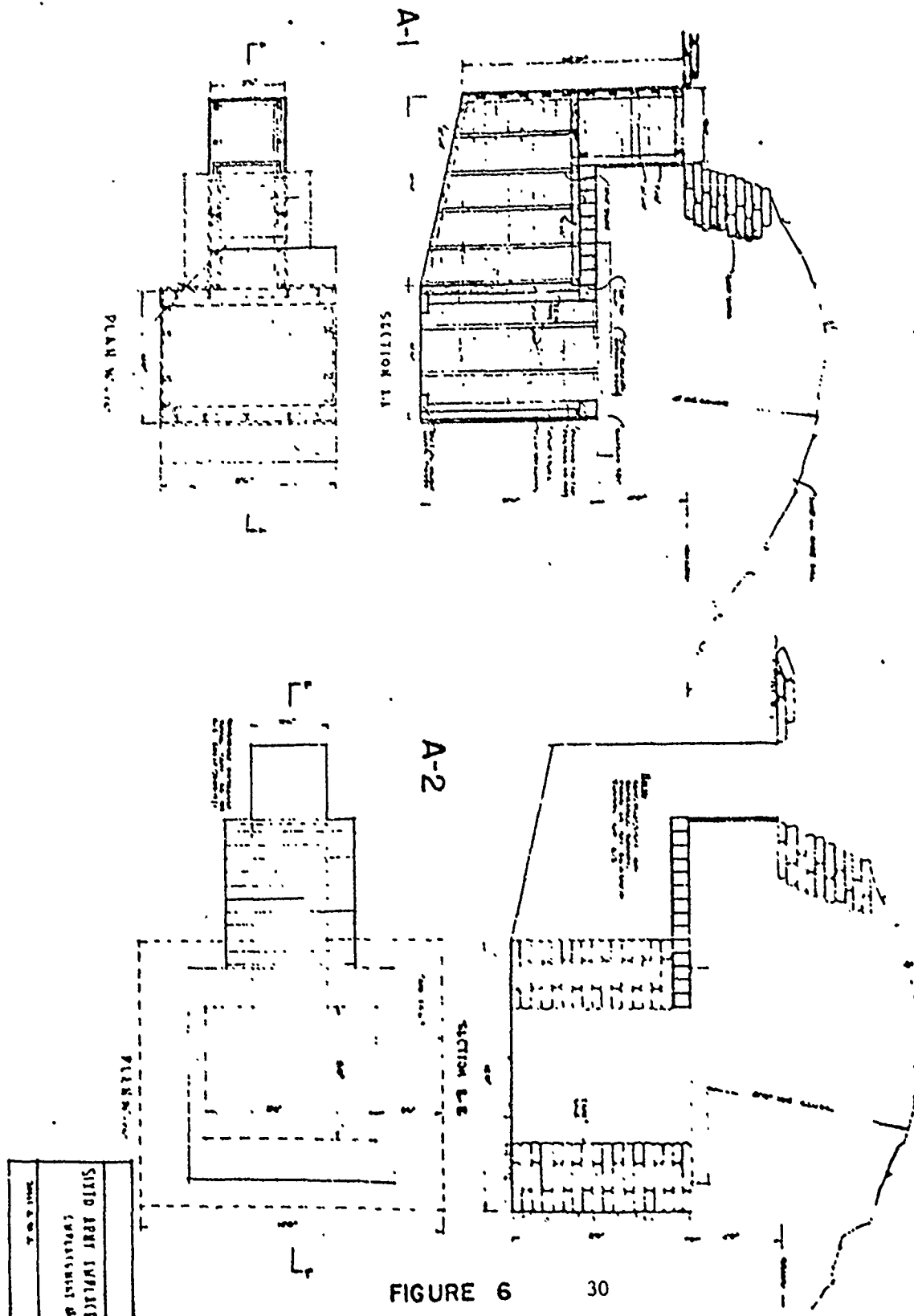


FIGURE 6 30

A-1 and A-2 Type Emplacements

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HQ CAMP DESERT ROCK
LAS VEGAS (872536) NEV
011200 June 1953

Annex 3 (SHOT VICTOR 2) to Final Report
EXERCISE DESERT ROCK V

I. GENERAL.

Incoming observers and troop personnel for Shot 2 closed in Camp Desert Rock on 20 March. Troop participants were from the Second, Third, Fifth, and Sixth Army Areas.

A full dress rehearsal was conducted on 22 March in the Tuaca Flat Area, actual site for this shot. The control group departed Camp Desert Rock at 0807 hours and all units closed in the entrenchment area at 1045 hours.

Actual shot day conditions were in order during the rehearsal. One of the ECT commanders experienced some difficulty in placing members of his command in the allotted trenches. Another "dry run" remedied this situation.

The arrival and detrucking of approximately 3,000 officers and men at the entrenching area was accomplished in the one (1) hour allotted for this purpose. It was surprising to note the crowded conditions that existed when troops detrucked in the relatively small area.

The ECT started the simulated attack from the trenches at 1200 hours. The attack continued for 1,500 yards and at that point the advance was halted. This concluded the tactical phase of the rehearsal.

The observers and troop personnel were taken through the equipment and animal display area shortly after the tactical phase ended. Later the observers were taken to the site of Shot 1 to observe the damage to equipment from a previous detonation.

Movement for return trip started at 1350 hours and all personnel closed in Camp Desert Rock at 1632 hours. The rehearsal progressed on schedule and much experience was gained by the staff in executing this phase of the exercise.

The control group departed camp for Shot 2 at 0041 hours, 24 March. A total of 185 vehicles were required to transport the Control group, observers and troops to the shot site. All personnel closed in the entrenchment area at 0340 hours. Vehicles were moved to a motor park, 8.5 miles from ground zero.

A pre-shot indoctrination and orientation was delivered over the public address system from 0410 to 0500 hours.

At H-Hour minus 10 minutes the Exercise Director ordered all personnel into the trenches.

At H-Hour minus 2 minutes, all personnel were ordered to crouch low in the trenches. A siren blast of 30 seconds duration was sounded at this time.

At H-Hour minus 90 seconds, the Atomic Energy Commission took over the public address system and counted off the remaining time at 30 second intervals until reaching H-Hour minus 10 seconds. Once more came the now well remembered "9, 8, 7, 6, 5, 4, 3, 2, 1 and ECT count" (0510 hrs).

A very bright light, which seemed to linger longer than the light noticed during the first shot, was observed in the trenches. Very little ground shock was received but the noise was deafening. Debris falling into the trenches in large quantities, followed by dust conditions, obscured the vision of personnel. None of the debris was large enough to cause injury.

A large fireball, engulfed in a huge dust cloud, was observed initially. Soon after the blast, the wind direction changed and caused a dust cloud to blow over the troops in the entrenchment area. A reading of 18 mr was noted at the trenches.

At 0533 hours the ECT's attacked objectives 1,000 yards to the north. The unit on the east, nearest to ground zero, had to sidestep to the west as the advance neared ground zero because of radiation intensities. Troops were able to move to within approximately 500-700 yards of their objectives when halted by Rad-Safe personnel as no further advance could be made under the established radiation criteria.

SECURITY INFORMATION

Nine (9) volunteer officers were positioned in a trench 2,500 yards from ground zero during the blast. They were in constant wire communication with the control trench, 1,500 yards to the rear, before, during and after the blast. None of the volunteers experienced any ill effects and all felt their combat efficiency would have been unimpaired.

A Marine Corps Helicopter Group (H-19) conducted experiments during the shot. Four (4) helicopters were on the ground approximately 16,500 yards from ground zero during the detonation. Three (3) of the aircraft became airborne immediately after the detonation and prior to the arrival of the blast wave. One of the airborne aircraft proceeded towards the burst after the arrival of the blast wave and was flown to within 3,500 yards of ground zero. Dust and airborne radiation limited any further movement toward ground zero.

The shock wave produced no adverse effects on either airborne or parked helicopters. It was determined that the initial intense light from a detonation would not noticeably affect the pilot of an airborne helicopter providing the pilot was observing 180 degrees from the blast area.

An Army helicopter (H-23) was used to perform a rapid survey of the equipment and animals in the display area two (2) hours after the detonation. Using this mode of travel, it was possible to proceed to within 400 yards of ground zero.

The observer group departed the entrenchment area at 0631 hours for a tour of the equipment and animal display. Troop units also visited the display area at the conclusion of the tactical maneuver. Shortly after 0600 hours, march units started the return trip and all closed in Camp Desert Rock at 1032 hours.

The maneuver, motor movement and other portions of the exercise were executed according to schedule and without incident.

No damage occurred in protective trenches at 1,500 yards and beyond. Sheep positioned in the open were alive and walking around after the blast. All sand bags, facing ground zero, were burned at this distance.

Participating in the exercise were 2,845 military and 16 civilian personnel, a total of 2,86 persons.

At ground level, in the entrenchment area, at shot time, temperature was recorded at 50.7 degrees Fahrenheit. Wind velocity, from a direction of 310 degrees true north, was 2 knots per hour. Almost simultaneously with the burst, a wind of 4 - 6 knots from approximately 5 degrees developed.

II. INTELLIGENCE AND SECURITY.

The two Battalion Combat Teams arrived properly cleared, were briefed, performed in a most co-operative manner and presented no security problems before, during, or after the shot.

The vehicle convoy was cleared through the forward area more smoothly than on the previous shot.

No presser representatives were not allowed to be present in the Shot Area for this shot. The problem of safeguarding of classified information was greatly reduced because of the absence of news interviews.

Signal photographers were barred by the Atomic Energy Commission from taking pictures unless the photographers were "Q" cleared. No "Q" clearances have been received for any of the photographers although more than six weeks have elapsed since application for such clearance was initiated. In order for the exercise to receive proper documentation it is extremely necessary that certain photographs of the area be secured. Because of this new ruling Desert Rock must rely on photographers within Camp Mercury, who are already assigned other commitments, in order to secure these photographs.

III. INSTRUCTOR GROUP.

On 21 March the orientation of one BCT in two groups of approximately 600 men each and the observer group for shot V-2 began. A rehearsal was held on 22 March which included a trip for the observer group to the display areas for Shot V-1. A discussion of the damage to equipment and the general condition of the area of the shot was presented.

The second BCT and remainder of the observer group instruction was completed on 23 March. A

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SECURITY INFORMATION

1 hour evening orientation was given to late arrivals. This was followed by a showing of Training Film "Operation TUMBLER-SHAPPER" (SECRET) to all observer personnel, on a voluntary attendance basis. This training film was favorably received. The same evening, in the open air theater, the following training films were shown on a voluntary basis to the ECT's: "The Effects of Atomic Explosion" (RESTRICTED), "Medical Aspects of Nuclear Radiation" (RESTRICTED), "Self-preservation in A-bomb Attack" (RESTRICTED), and "The Great Gun" (UNCLASSIFIED).

Shot V-2 was fired on 24 March and ECT's and observers were conducted through the equipment display area to observe, and receive orientation as to the effects of the detonation.

The conduct of the orientation for shot V-2 was improved both in the training auditorium and the forward area as a result of the use of proper equipment and training aids which were unavailable for shot V-1. Mobile sound trucks were furnished to the instructors with the ECT's to further assist in the orientation and control in the forward area.

IV. SIGNAL.

The requirements for this shot were generally the same as for Shot V-1. A few changes were made to provide a better communication system in the forward area.

Public address loudspeakers were installed on three (3) thirty (30) foot poles in the entrenchment areas. This provided a good coverage for all parts of the trench area.

Once more the battalion commanders were provided AN/PRC-10 radios for command and control purposes. More frequencies were assigned to the Exercise Director and, although radio communication was improved considerably, some transmission difficulty was experienced when the battalions were 2000-3000 yards from the control trench.

A more satisfactory wire communications service was provided in the display area than on Shot 1. This was accomplished by burying the wire along both sides of the equipment display triangle prior to the shot. This wire system terminated at stakes which were located at 500 yards intervals as far forward as 1000 yards from ground zero. Rad-Safe personnel installed telephones at these locations when wire communications with the control trench was desired.

V. RADIOLOGICAL SAFETY.

Shot Day Operations. The 2.5 r/hr limit was reached by the monitors at 850 and 1250 yards from ground zero on the right and left sides of the sector respectively. The 5 r/hr line was less than 100 yards beyond. Intensities ranging from 5 mr/hr upward were encountered over the entire test area. Rad-Safe Operations for Shot 2 were the same as for Shot 1 with two exceptions:

The monitor and marking party trucks were used to transport the volunteer observers to and from their trenches on the 2500 yard line.

A change in the direction of the wind caused part of the radioactive cloud to pass over the trenches. There was no appreciable fall-out in the trench area, but radiation intensities at ground level reached 18 mr/hr while the cloud was overhead. There was rather heavy fall-out of radioactive material in the maneuver area, particularly in a draw which lay between the attacking troops and their objective. The deposit in the draw was of high enough radiation intensity (about 14 r/hr) and of sufficient extent to call for withdrawal of the troops from the contaminated ground. The CER monitors of the ECT's proceeded into the area without giving any indication of their readings to their unit commanders. Upon being directed by the Rad-Safe Officer, the unit commanders seemed to experience difficulty in withdrawing their men. However, little time was spent in the area. The first of these deficiencies may be attributed to training which emphasizes techniques and does not train the monitor in what to do when radiation fields of high intensity are approached and entered. The second deficiency probably resulted from the provisional organization of the attacking troops.

Special Operations.

Immediate radiation intensities were recorded in the same manner as in Shot 1.

The unexpected fall-out in the area west of Shot 2 ground zero extended over positions being prepared for Shot 5. Since the radiation intensity was approximately 2 r/hr work was discontinued. Prediction of decay rates and calculation of time of stay in the area was necessary to plan for engineer operations. Future intensities and conditional dosages were calculated. Early morning surveys were made daily to check the calculations. It was found that the actual reduction in intensi-

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ATOMIC ENERGY ACT 1946

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SECURITY INFORMATION

HQ CAMP DESERT ROCK
LAS VEGAS (872536) NEV
011200 June 1953

Annex 6 (SHOT VICTOR 6) to Final Report
EXERCISE DESERT ROCK V

GENERAL.

Shot V-6 was detonated on a 300 foot steel tower at 0445 hours, 11 April. Observers from all services witnessed the explosion from a vantage point on News Nob, a small hill near the Atomic Energy Commission Control Point at the entrance to Yucca Flat. The steel tower containing the nuclear device was located in the west-central portion of Yucca Flat, approximately ten (10) miles from the observers.

This shot was a low yield experiment and no troop exercise was conducted in connection with it. Participating as an observer group from Camp Desert Rock, were thirty three (33) Army, twenty five (25) Marine, four (4) Air Force and one (1) Navy officers. The twenty five (25) Marine personnel were commanders and staff officers of the Marine Corps Provisional Atomic Exercise Brigade who came to Camp Desert Rock as members of the advance party of the Brigade to prepare for Marine participation in shot V-5 which followed Shot V-6 due to a change in AEC schedules. The purpose of having these Marine officers attend the V-6 shot was to familiarize them with atomic phenomena so that they could disseminate the information to the Marine units. The effectiveness of having commanders view a detonation prior to directing troops in an atomic exercise was well demonstrated in later operations.

The observers, totaling 63 personnel, departed Camp Desert Rock at 0300 hours, 11 April for News Nob, a distance of twenty five (25) road miles. The convoy arrived at News Nob at 0412 hours without incident.

Vehicles were parked in a parking area 100 yards from News Nob near the observation point. A member of the Camp Desert Rock Instructor Group gave all observers a twenty minute briefing and orientation on the burst phenomena at the observation point.

Since the burst was small, and the observers were 10 miles from the detonation, no shelter was necessary for personnel or equipment. The observers were required to face away from the tower immediately prior to H-hour and remain faced away until after the flash of detonation. The observers witnessed the formation of the mushroom cloud and the subsequent action of the fireball very clearly. No blast wave was felt, but a sharp crack of sound reached the observation point. Four Marine helicopters (H19 type) participated in the shot and were clearly seen from the observation point on News Nob.

The return trip to Camp Desert Rock was completed without incident at 0540 hours. No assistance from the Rad-Safe personnel was required at any time during the operation. No measurable radiation was received at the observation point.

Communications for the operation consisted of direct telephone lines into the Proving Ground Command Post and into the AEC switchboard. A loudspeaker system tied into the AEC command post circuit was also used to broadcast the count down sent out by an AEC announcer from the control point.

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SECURITY INFORMATION

HQ CAMP DESERT ROCK
LAS VEGAS (872536) MEV
011200 June 1953

Annex 7 (SHOT VICTOR 7) to Final Report
EXERCISE DESERT ROCK V

I. GENERAL

Troop observers arrived at Camp Desert Rock during the period 21-24 April. Arrival times were so separated that less than one half of the observers were present the first day the orientation course was conducted. Troops from the Second, Fourth, Fifth and Sixth Armies closed in camp on 22 April and were organized into two (2) ECT's for participation in the tactical maneuver.

A rehearsal of the tactical maneuver and the observer program was conducted in the Yucca Flat area on 23 April. Actual site positions to be occupied on shot day were utilized. The Control Group departed Camp Desert Rock for the forward area at 0700 hours and all march units closed in the exercise area, 33.2 miles from camp, at 0945 hours.

An on site orientation program was conducted by a member of the Instructor Group. Time selected for H-Hour was 1030 hours. At this time all personnel positioned themselves in the trenches and troop units started the simulated attack at 1035 hours.

The attacking forces moved very rapidly and at the end of thirty five (35) minutes had advanced a distance of 2500 yards. Attacking waves of troops formed solid masses in some instances and the commander experienced difficulty in controlling his units. Upon arrival at the 2000 yard line, the attack was halted and this completed the tactical phase of the maneuver.

Troop units and observers were taken through the equipment display area. Later the observer group was taken to the site of Shot V-5 (18 April) to observe damage incurred on equipment by a previous detonation. Return motor movement to camp started at 1500 hours and the last march unit closed in Camp Desert Rock at 1505 hours. No unusual incidents occurred during the rehearsal.

The control group departed camp for Shot V-7 at 0030 hours 25 April. Transportation requirements to move the control group, observers and troops to the shot site totaled 179 vehicles. All march units and personnel closed in the entrenchment area at 0322 hours. Vehicles were moved to a parking area 5.9 miles from ground zero.

A member of the Instructor Group conducted a pre-shot orientation from 0330 to 0430 hours. Information pertaining to an atomic device detonated from a tower was presented to the observers and troops.

The Exercise Director ordered all personnel to enter the trenches at H minus 15 minutes and at H minus 2 minutes all personnel were instructed to crouch low in the trenches. A siren warning of 30 seconds duration was sounded at this time. With 90 seconds remaining prior to the detonation, an Atomic Energy Commission spokesman from the command post took over on the public address system and counted off the remaining time at 30 second intervals until reaching H minus 10 seconds. At H minus 5 seconds, the final count down started with the familiar "4, 3, 2, 1 and Now." It was now 0430 hours.

A bright light, of approximately 3 seconds duration, was noted at the time of detonation. The ground shook was heavy, and the earth appeared to roll for a moment. Noise accompanying the blast was deafening, loudest of this series of shots. Dust conditions following the blast and debris falling into the trenches obscured the vision of personnel in the trenches.

As usual for tower shots, the fireball was engulfed in a large dust cloud initially. The cloud rose steadily and actually formed the well known "atomic mushroom." This was by far the most picturesque atomic cloud to be observed, from a tower shot, in this series of shots. An initial radiation intensity of 5 r/hr registered on survey meters in the trenches; however, the radiation lasted for such a short time, the initial radiation dose was less than 25 mr.

Both ECT's started the attack at 0444 hours towards objectives 4000 yards to the north. The ECT on the east (R) advanced to within 2000 yards of ground zero at 0600 hours. At this time the attack was halted by the Rad-Safe monitors due to a reading of 2.5 rcontgens at this point. The ECT on the west (L) encountered no areas having a high radiation intensity and advanced until the attack was halted for other reasons.

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SECURITY INFORMATION

Upon completion of the tactical phase of the maneuver, observer and troop personnel were moved through the equipment and animal display area. Movement forward was limited to the 3000 yard line due to radiation levels encountered.

Eight (8) volunteer Army and Navy officers were positioned in trenches 2000 yards from ground zero during the blast. Telephone communication was established from the control trench to the volunteers and the Exercise Director was able to keep all volunteers informed prior to, during and after the shot. All volunteers withstood the blast without incident.

The Marine Corps Helicopter Groom (H-19 type) conducted experiments during the shot. A full report on this participation is included in paragraph VIII.

An army helicopter (H-23) was used for reconnaissance purposes after the detonation. It was possible to observe the equipment and animals in the forward area during these flights. Another helicopter was available for evacuation purposes.

Return movement to Camp Desert Rock started at 0625 hours and all march units and personnel closed in camp at 0957 hours without incident.

Sand bags in the entrenchment area, 4000 yards from ground zero were singed. Joshua trees, located 400 yards west and 300 yards north of the entrenchment area were ignited shortly after the detonation.

Of unusual interest, occurring as a result of this shot, was the caving in of a C-4 type bunker at the 1500 yard line. A sheep, tied to a stake, was placed in this bunker on 24 April, prior to time of caving-in. On 13 May, a working party removed the top portion of the bunker and the trapped sheep leaped from the emplacement. Even though the animal had been without food and water for nineteen (19) days, it appeared in good condition and was able to walk. The animal recovered completely and was used in an animal display for a subsequent shot.

Participating in the exercise were 3,102 military and 24 civilian personnel, a total of 3,126 persons.

At ground level, in the entrenchment area, temperature was recorded at 53 degrees Fahrenheit. Wind velocity, from a direction of 340 degrees, true north, was 5 knots per hour and visibility was 50 miles. Measured humidity was 26 percent and atmospheric pressure was 870 millibars.

II. INTELLIGENCE AND SECURITY.

The major difficulty encountered during the convoy movement was the identification of vehicles within the march units. Only two march units dimmed their lights at check points. Signs were dusty and hard to decipher.

Once again observers arrived without security clearance indicated on their orders. This was corrected by sending messages to observers home station for clearances.

Late arrivals created a problem as to checking attendance at orientation briefings in that rosters could not be completed prior to check-in time at the theater. No security violations were reported for the group attending this shot.

III. INSTRUCTOR GROUP.

In preparation for Shot V-7, the Instructor Group presented three types of orientation programs. An eight hour period of SECRET classification was presented to those troop observers who arrived at Camp Desert Rock on or before 22 April. A four hour period of orientation was presented to those observers who arrived after 22 April, and another four hour presentation was provided on the CONFIDENTIAL level for BCT's and all observers not cleared above the CONFIDENTIAL access level. In general, the change in arrival plans of certain contingents of observers was such that they arrived at Camp Desert Rock on the day prior to the shot rather than three days before caused a hurried rearrangement of orientation programs. Each group, however, received adequate orientation prior to the shot, though not the full eight hours originally planned.

Two hundred and ten (210) observers for Shot V-7 arrived at Camp Desert Rock prior to 0700 hours 22 April. All BCT personnel were present prior to this time. The Instructor Group presented a four hour CONFIDENTIAL orientation for BCT AMIE during the morning of 22 April and for BCT BAKER in the afternoon. All classes were conducted in the open air amphitheater. Ample seating was available for the full twelve hundred men oriented at one time. No difficulty was encountered in hearing

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SECURITY INFORMATION

the instructor from any part of the amphitheater, the Signal Corps amplifiers completely filling the requirement for sound. Training aids such as charts set up on the stage could be seen very well from the rear of the amphitheater.

The 210 observers arriving on 21 April received a four hour portion of the standard eight hour orientation for observers on the SECRET level beginning at 0730 and concluding at 1155 hours, 22 April. For this same group, two films were shown during the afternoon. "Operation Greenhouse", a documentary of the AEC tests on Eniwetok Atoll in the spring of 1951, and "Operation Tumbler or Snapper", a documentary of military participation in the spring tests at Nevada Proving Ground in 1952, were screened on a voluntary basis. A total of one hundred and sixty hour (164) observers attended the film showing.

On 23 April, a rehearsal of the troop and observer participation in Shot V-7 was conducted. Although one half of the observers had not yet arrived, those present went through the rehearsal and were able to pass on instructions and assistance to later arrivals. Both ECT's took part in the rehearsal. In the trench area, at a time simulated as H minus 20 minutes, a member of the Instructor Group carried out a terrain orientation followed by instructions for procedure in the trenches prior to H hour. Following H-Hour, an instructor escorted the observer group and other instructors conducted each ECT through the display areas so that a basis for comparison of damage could be made following the actual shot. It was carefully pointed out to all that contamination might deny the area to observers and troops on shot day, nearer the tower than 1500 or 2000 yards.

On 24 April, those observers who had received the first four hour period of orientation on 22 April were presented the second four hours. During the afternoon of 24 April, 250 observers were oriented in weapon delivery means available to the services and in tactical employment of atomic weapons. At 1930 hours, 24 April, late arrivals and general officers were briefed as to the tactical problem of the exercise and, in general, procedures to follow while in the forward area. At this time technical questions, within the limits of SECRET classification, were answered by a member of the Instructor Group.

From H minus 60 minutes to H minus 2 minutes on shot day, a member of the Instructor Group conducted a pre-shot orientation of a general nature as to terrain, safety, and air participation in the exercise. Following the shot, instructors conducted each ECT and the observer group through the display area to the 2000 yard line. Closer approach was prohibited by radiation levels. Damage results at ranges closer than 2000 yards were obtained by the instructors and presented to all personnel, though viewing by all was not possible.

IV. SIGNAL COMMUNICATION.

The layout of the trench area for this shot was generally the same as for previous shots in the forward area and the communication installations generally conformed to the plan followed in prior shots detonated in this area.

Three speaker poles were installed in the trench area, mounted with four speakers pointing in four directions to cover all troops within the general area of the speaker pole. Each group of four speakers were fed from one public address system and the three systems were all tied in to one central system in the Exercise Director's trench for control. This installation proved to be very satisfactory and is now the standard installation used in all shots.

Telephones were installed in the forward trench of each ECT commander. In addition, telephones were installed in the observers trench, the parking area and the heliport. Communication with Camp Mercury and Camp Desert Rock was provided through the forward switchboard located in the trench area.

Normal radio communication was installed with the Rad-Safe officers in one net, the Exercise Director and the ECT commanders, the parking area and the heliport in another net and each of the ECT's in a separate net.

Four mobile public address systems were used for orientation purposes in the display area. The public address systems worked out very well and were in place ready for operation prior to the arrival of the troop units. Two power megaphones were used by the ECT commanders for oral orders to their respective units and proved quite satisfactory.

V. RAD-SAFE.

No changes were made in the organization and operation of the Camp Desert Rock Rad-Safe orga-

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ation. Pre-shot tasks included conducting a 6 hour radiological monitor refresher course and test for participating army units.

This shot was characterized by an apparent higher yield and more wide-spread radiological contamination than previously encountered. There was little wind at shot time. The cloud drifted eastward with a heavy fall-out in that direction. Radiological Safety monitors for the troop units were in position at H plus 5 minutes in spite of the heavy dust cloud which hung over the area. The display area survey teams reached their initial points at approximately H plus 15 minutes. The 2.5 r/hr intensity was reached on the east (R) side of the display area at 2200 yards from Ground Zero with the 5 r/hr intensity being reached at 2000 yards. On the west (L), the 2.5 r/hr intensity was reached at 2500 yards with the 5 r/hr intensity at 2100 yards. Intensities in the troop trench area slowly rose to 120 mr/hr but quickly receded to about 30 mr/hr. Due to the high intensities encountered in the test area and on the access roads, final personnel and vehicle monitoring was impossible in the test area. Troops and vehicles were moved to the decontamination station at Jucca Pass and to Parking Area A (837925) for field decontamination and final monitoring.

The performance of the unit CBR personnel as radiological monitors was considerably improved over the previous army units. Troop participation from the stand point of radiological safety was excellent.

Rad-Safe operations in the field of providing for the collection of information were continued on the same scale as for Shot V-5, except no pressure gauges were available for this shot.

Post shot evaluation of the operation indicated that the corrective measures taken after Shot V-5 were effective.

Procedures:

Heat sensitive paper was placed in positions exposed to direct thermal radiation and in positions shielded from direct radiation but exposed to reflected or scattered radiation at 500 yard intervals from ground zero from 500 yards to 3000 yards. The exposed papers were placed in vertical position so as to receive near maximum radiant energy. The sheltered ones were placed in a horizontal position, face up to measure radiation in the trenches. At 1500 yards and 2000 yards papers were exposed in a horizontal position on the surface of the ground with no thermal shielding.

Results:

Values given are approximations:

Distance from GZ in yards	Sheltered Position	Exposed Position
500	Lost	Paper destroyed, more than 34 cal/cm ² .
1000	Lost	Paper destroyed, more than 34 cal/cm ² .
1500	No effect, less than .45 cal/cm ² .	Vertical paper destroyed, more than 34 cal/cm ² . Horizontal paper, about 5 cal/cm ² .
2000	No effect, less than .45 cal/cm ² .	Vertical paper, 25 cal/cm ² . Horizontal paper, about 5 cal/cm ² .
2500	No effect, less than .45 cal/cm ² .	4 cal/cm ² .
3000	No effect, less than .45 cal/cm ² .	25 cal/cm ² .

Immediate Radiation in roentgens received in emplacements.

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Distance from GZ in yards	C1 Exposed post	C2 Shallow slit Trench	C3 Deep slit Trench	C4 1 Man emplace- ment	C5 2 Man emplace- ment
1500	1150.0	lost	lost	24.5 r	lost
2000	175.0	lost	80.0	3.2	4.6
2500	22.0	18.5	11.0	.2	1.0
3000	5.6	1.7	.7	.5	.5
3500	.95	.25	.1	0	0

Badges placed in 6 ft trenches at 1500 yards recorded 28.1 r. The film badge in the 1750 yard trench was lost. Trench at 2000 yards received 8.75 r.

These data represent the immediate radiation personnel protected by the emplacements and unprotected at the same distance from ground zero would have received.

Badges were exposed in National Bureau of Standards holders.

VI. MEDICAL.

The medical support for this operation was carried out in an identical manner to that for V-5. The same plan for emergency medical care for the volunteer group was prepared, but as no casualties occurred it was not implemented. The only casualty reported was one of the enlisted men from 10T Baker. This man developed a rather severe nose bleed just prior to the detonation. He was treated immediately after H-Hour. It was felt that he should not participate with the troops and he was therefore held at the aid station until the conclusion of the exercise.

Medical evaluation of test items:

On the day prior to the detonation 37 sheep were placed at varying distances from ground zero. Commencing at 500 yards five sheep were placed at each 500 yard interval extending through 3500 yards from ground zero. The sheep employed at each of the 500 yard intervals were placed one to each C-type position (C-5, C-6, C-7, C-8 and C-9). In addition to the above positions there were two special trenches, one at 1500 yards and one at 1700 yards. One sheep was placed in each of these two positions.

The two special trenches at 1500 yards and 1700 yards are conventional type trenches 6 ft. in depth similar in design to the trenches used by volunteer observers.

The veterinary officer and one enlisted man accompanied the control group. Immediately following the detonation a medical technician accompanied by a monitor moved forward by truck to observe the sheep. A veterinary technician accompanied the loading party later in the morning to aid in rendering a tentative evaluation of the effects of the detonation in relation to the effects incurred by the sheep. When the sheep were returned to Camp Desert Rock a final evaluation was rendered by the veterinary officer. The veterinary officer, because of previously acquired radiation, was not permitted to advance past the control trench, so it was necessary to follow the above procedures in relation to evaluating the effects incurred by the sheep.

Most of the evaluation results are covered in the evaluation forms or the picture captions, but following are some of the more pertinent results.

The sheep at 3500 yards were all found to be normal.

The sheep at position C-9, 3000 yards had moderate wool burns. The other sheep at this distance were normal.

At 2500 yards the sheep at position C-9 had second degree burns on the face and wool burns covering 1/4 of the body area. The sheep at position C-7 had moderate wool burns. The sheep at positions C-5, C-6 and C-8 were all normal.

At 2000 yards the sheep at position C-9 had second degree burns on the ears and extensive wool burns covering 1/2 the body area. This animal suffered no other ill effects until epilation, i.e., loss of hair, appeared 8 May. This animal has as yet shown no inappetence and it is considered to have a better than average chance to effect a recovery. The dose of radiation this animal received was 253 r. The sheep at position C-8 had third degree burns on the face and moderate wool burns.

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It suffered no other ill effects until epilation appeared 10 May. This animal has, as yet, shown no inappetence and it is believed that it will recover. The radiation dosage for this animal was 175 r. The sheep at position C-7 suffered no visible effects from the detonation. Epilation ensued 10 May. This animal has, as yet, shown no inappetence and it is believed that it will recover. The radiation dosage for this animal was 113 r. The sheep at position C-5 and C-6 were both normal.

At 1500 yards the sheep at position C-9 had third degree burns on the face and extensive wool burns. It refused food and water after being returned to the sheep pens and died the night of 26 April. The data on the amount of radiation received by this animal was lost, but it is assumed to have received in excess of 1000 r. The sheep at position C-8 had moderate wool burns. It remained normal until 3 May when epilation ensued. This animal has not shown any inappetence, but it is inconceivable that this animal will survive since the radiation dosage it received was 950 r. The sheep at position C-6 and C-7 have shown no visible effects. The radiation dosage reported for them was 464 r and 427 r respectively. At position C-5 the entrance to the bunker collapsed so the sheep is assumed to have died from suffocation.

The sheep in the conventional type trenches at 1500 and 1700 yards initially suffered no visible effects. Epilation appeared in the sheep placed at 1700 yards on 3 May. It has shown no inappetence, so it is assumed this sheep will recover. The radiation dosage received by this animal was 173 r. Epilation appeared in the sheep placed at 1500 yards on 10 May. This sheep has shown no inappetence, so it is assumed it will recover. The radiation dosage received by this sheep was 222 r. Both sheep have previously been exposed to an atomic detonation.

At 1000 yards the sheep at position C-9 was killed by blast effects. It was blown back approximately 50 yards. The sheep at position C-8 was killed by blast effects. It was blown clear of the trench and back approximately 40 yards. The sheep at position C-7 had extensive wool burns on the back. It developed incoordination the morning of 26 April and became prostrate the afternoon of 27 April. Death occurred the night of 27 April. Death was attributed to acute radiation sickness. The radiation dosage this animal received was 10,435 r. The sheep at position C-6 initially suffered no visible effects. It became prostrate the afternoon of 28 April and died the night of 28 April. There was a complete absence of external injuries, and this can be considered a typical case of acute lethal radiation sickness. The radiation dosage received by this animal was 4,638 r. The sheep at position C-5 initially suffered no visible effects. Epilation appeared 10 May. This animal has shown no inappetence, but it is doubtful that this animal will recover since the radiation dosage received was 623 r.

At 500 yards the sheep at position C-6, C-7, C-8 and C-9 were all killed by blast effects. At position C-5 the bunker was collapsed, so it is assumed the sheep at this position died directly from blast effects or indirectly from suffocation.

Total number of sheep exposed thirty-seven; eight killed directly or indirectly from blast (suffocation); three died from acute lethal doses or radiation. At the present time twenty-six of the original thirty-seven are still alive. It is considered that at least two of this total will eventually die.

It will be noted that the picture section of this report is rather brief in comparison with the two preceding reports. This is due to the fact that there was too much radiation present in the display area, and consequently a photographer could not enter this area for several days following the detonation.

VII. VOLUNTEER OBSERVER PROGRAM.

Volunteer observer trenches were located 2000 yards from ground zero on an azimuth of approximately 180°. Trenches were 6 feet deep and 3 feet wide. One trench was revetted with sandbags and timber. The second was an unrevetted trench with a sandbag parapet.

The volunteers consisted of 7 Army Officers and 1 Naval Officer. All officers were well indoctrinated in the field of special weapons and capable of calculating effects of atomic weapons, utilizing TM 23-200, dated 1 Oct 1952. After careful calculation all agreed that the trenches were located at a safe distance for a weapon of the yield predicted.

The atomic weapon exploded was an experimental device placed on a 300 foot tower. The predicted yield was estimated as 35 KT, plus or minus 5 KT. Calculations of volunteers were based on the highest predicted possibility, 40 KT. It is estimated that the actual yield, although not available at this time, will probably exceed the highest predicted possibility by as much as 25 percent.

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Weather data for Ground Zero at the time of burst were:

Temperature	53 degrees F
Wind Direction	040 degrees T
Wind Speed	7 Knots
Visibility	50 miles
Pressure	870 millibars

Volunteers reported the following effects were noted:

Initial flash. The light was reported as being of great intensity. Objects in the trench could not be distinguished during the period of greatest intensity. Normal vision returned immediately after the light subsided.

Thermal effects. All observers reported feeling heat from above at the time of the light. This heat was not intense but was distinctly noticeable. There were no instruments available for measuring the amount of heat received in the trench.

Blast effects. The air blast was reported as a very loud sharp noise. Concussion pressure was felt but no pain or after effects were noted. Sand and dirt blown into the trenches by the air blast.

Ground shock. The ground shot was described as being short vibration-like motions similar to a mild earthquake. The duration of the shock was short and no separate pulses were felt.

Nuclear radiation effects. First reading noted on radiac instruments gave a rate of 100 roentgens per hour. During the 5 minute period the volunteers remained in the vicinity of the trenches this rate fell to 20 roentgens per hour. As the group moved toward the road, to meet vehicles sent forward to evacuate them, they passed through a heavy fall out of sand sized particles carrying a radiation reading of 50 roentgens per hour. As they evacuated to the rear radiac instrument readings declined rapidly to 1 roentgen per hour 1000 yards in rear of the trenches they had occupied. Dosimeters carried by the volunteers registered an average total dosage of 10.4 roentgens. Developed film badges registered total dosages ranging from 11.7 to 16.3 roentgens. The wide range of the readings of these film badges raises a question as to the reliability that should be assigned to readings so obtained.

Miscellaneous effects. At the instant of first light several observers felt a shock variously reported as similar to an earth tremor or air blast. One observer holding a telephone, connected to a direct line between volunteer trench and control trench, received a distinct electric shock and a tingling sensation about the neck. The operator holding the telephone in the control trench (at 4000 yards from Ground Zero) reported receiving a shock equivalent to that received when holding a bare 110 volt electric wire. All observers reported a generally reduced efficiency during the first 5 minutes after the blast because of heavy dust conditions.

The following conclusions were made by the volunteer observers:

That troops would gain very little by being entrenched closer to Ground Zero than 4000 yards during orientation and indoctrination exercises because:

They can feel the effects of the detonation at this distance as well as they could at a closer point.

They can better observe the fireball and mushroom cloud.

They are sufficiently removed from the heavy dust and possible radiation hazard.

That the present volunteer observer program, with present mission and limiting criteria, has served its purpose and should be discontinued.

That a volunteer program of this type with a mission of indoctrination for personnel having special weapons training or assignments with special weapons programs would be worthwhile.

That future volunteer programs would have greater value if volunteers were positioned in a variety of standard field fortifications and combat vehicles approximating actual combat conditions.

That instrumentation placed in the trenches to record pressures, heat, ground shock, and nuclear radiation would be of assistance in evaluating observer's reactions.

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VII. MARINE CORPS AIR (HELICOPTER).

Marine Helicopters "A" and "B" were positioned at approximately 12,440 yards from ground zero. Helicopter "A" was positioned with its left side exposed and "B" was facing the blast. From one (1) minute prior to the blast until after the passage of the shock wave, Helicopters "A" and "B" hovered at about ten (10) feet above the ground.

The pilots of Helicopters "A" and "B" protected their eyes by lowering the bills of their caps so as to shield their eyes from the flash. The pilots experienced no flash blindness. The co-pilots wore standard 4.2 density goggles at the time of detonation and were prepared to assume control of the helicopter should the pilot be blinded by the flash.

Helicopters "A" and "B" were subjected to .59 psi at their position. The control of the helicopters was not effected; however, a window in the passenger compartment of Helicopter "A" was blown out of the rubber molding. No other damage occurred.

After passage of the shock wave, Helicopters "A" and "B" proceeded toward the shot area. Helicopter "A" skirted the dust column noting radiological conditions up to 50 r/hr. Helicopter "B" proceeded to a position 2000 yards west of ground zero and landed. The monitor in "B" disembarked and continued on foot to a position 950 yards from ground zero recording radiological readings up to 10 r/hr.

Helicopter "C" took off from Camp Desert Rock twenty two (22) minutes prior to detonation and arrived at the south end of Yucca Lake two (2) minutes prior to detonation. Helicopter "C" was continuing its flight toward the shot area at the time of detonation and during the passage of the shock wave maintaining 400 feet altitude and 60 knots indicated air speed. The pilot protected his eyes from the direct rays of the flash by lowering the bill of his cap and concentrating his vision on the flight instruments. No flash blindness was noted. The co-pilot wore standard 4.2 density goggles. The passage of the shock wave, which subjected "C" to .55 psi, did not effect the control or harm the helicopter in any way.

After passage of the shock wave, Helicopter "C" proceeded around the upwind side of the dust column and landed about 2200 yards northwest of ground zero.

AIR SAMPLING and SAMPLING, SAMPLE COLLECTION

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
AFCRL - Natural Aerosols and Nuclear Debris Studies	AFCRC/NANDS PR
AFSWC - Operation Nougat	SWC SWOP 1-2134
CONVAIR - Fission Product Field Release Program for Evaluation of Nuclear Aircraft Hazards	CVC NARF 58-13R
CONVAIR - Fission Products Field Release Test-I	SWC TR 59-44
AFCRC - Preliminary Report on Particle Analysis of Debris from Ivy, Mike, and King	AFCRC 7
AFCRC - Preliminary Report on Radiochemical Analysis of Upshot-Knothole	AFCRC 8
AFCRC - Report on Studies of Particulate Debris from Shots Tumbler-3 and Snapper-3	AFCRC TR 53-4 AWD
AFSWC - A Study of the Fission Product Gamma Spectra of a Nuclear Cloud at Early Times	SWC TR 58-44
AFSWC - Support of the AEC for Cloud Sampling	SWC TN 56-34
AFSWC - Technical Air Operations, Operation TEAPOT	WT-1206
Chem & Rad Labs - Fallout & Cloud Particle Studies, Op. Ivy	WT-617
DOD - Scientific Director's Summary Report, ROLLER COASTER	DASA- 1644
Isotopes - Fallout Collection, Op. ROLLER COASTER	POR 2503
Lamont Geol. Obs. - Radiological Hazards from Contaminated Aircraft	SWC SWR TM 59-4
LRL - Teapot Preoperational Report, Sample Collection	UCRL 4415
LASL - The Turquoise Book, Operation Ivy	OI TB

AIR SAMPLING and SAMPLING, SAMPLE COLLECTION (Cont'd)

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
NRDL - Characteristics of the Radioactive Cloud from Underwater Bursts, HARDTACK	WT-1621
NRDL - Fall-Out & Airborne Activity in Op. WIGWAM	WT-1017
NRDL - Radiological Effects from an Underwater Nuclear Explosion	POR-2004
NRDL - Some Radiochemical and Physical Measurements of Debris from an Underground Nuclear Detonation	PNE 229F
NRDL - Spectrometric Analysis of Gamma Radiation from Fallout from Operation REDWING	NRDL-TR-146
Nuc. Def. Lab - Residual Alpha Contamination from Very-Low-Yield Detonations	NDL-TR-60
Scripps Inst. - Collection of Early Water Samples for Radiochemical Analysis & Yield Determination, WIGWAM	WT-1039
Weath. Bur - PROJECT Stemwinder, DOMINIC	WT-2060

ARGUS

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
SWC-TR - Radiation From Argus Electrons	SWC-TR-59-35
AFSWC - Personnel Hazards Associated with Argus Electrons	SWC-TR-61-92
AFSWC - Project Jason Final Report	SWCSWR MP-1
DASA - Report of the Commander	WT-1665

APACHE BURST

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
EG&G - Composite Cloud Data - Operations IVY, CASTLE, REDWING	EG&G-TM-B-357

ASROC

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
NOTS - Operation Sailor Hat; ASROC	POR-4062
NOL - Surface Phenomena	POR-2001
DTMB - Scientific Directors Summary Report	POR-2007

ATMOSPHERIC BURSTS

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
AFSWP - HARDTACK Summary Report	AFSWP-OH-SR
DASA - Technical Summary of Military Effects, Programs 1-9, Op. TEAPOT	WT-1153
LASL - CROSSROADS Handbook of Explosion Phenomena (includes Safety, Health, Gamma, & Neutron)	LA-550
USA-NDL - Effects of the DAVY CROCKETT Type Nuclear Weapons (LITTLE FELLER I & II)	NDL/TR-64

ATOMIC CLOUD-SAMPLE COLLECTION

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
AFSWC - History of AF Atomic Cloud Sampling	SWC SWEH 2-0034
LRL - Buggy: Special Cloud Content Studies	PNE 330
LRL - Distribution of the Radioactivity from a Nuclear Cratering Experiment	WT-1817
LFE Corp. - Special Particulate Analysis of Debris Samples from Airbursts	DNA 4038F

UCRL - Estimate of the Radioactivity Released in the BANEERRY Event	UCRL 51095
EG&G - Analysis of Grable Nuc. Cloud Motions	EG&G/LAD/8566

ATOMIC WEAPONS TESTS

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
Boeing & WADC - B-52D Operation HARDTACK Data, Vols I thr	WADC TN 59-106
AFSWC - Final Report of Op. PLUMBBOB	SJC-HIST. OP FR-F7 (4950)
DASA - Nuclear Weapons Effects Test Summary	WDA 625

BALL OF FIRE

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
Army Signal Research Lab - Radar Determination of Fireball Phenomena (includes U.S. destroyers)	WT-1639
Columbia Univ N.Y. Electronics Res. Labs - Microwave Attenuation Final Report (aircraft flying behind fireball)	POR-2043
G.E. TEMPO - BLUE GILL Third Report of the Fish Bowl Rapid Interpretation Group (includes Ship & Aircraft locations, eyewitness accts.)	DASIAC rpt. 8
G.E. TEMPO - King Fish Fourth Report of the Fish Bowl Rapid Interpretation Groups (includes ship and aircraft locations and eyewitness account)	DASIAC rpt. 9
DASIAC - Atmospheric Effects, Bibliography	DASIAC/B-AE
NOL - Blast Pressures and Shock Phenomena Measurements by Photography (includes aerial photo)	WT-902
Wright Air Development Center - IBDA Phenomena and Techniques (Operation Upshot-Knothole- three radar equipped aircraft)	WT-751
Air Force Cambridge Research Center/Mass and Technical Operations Inc. - Thermal Flux and Albedo Measurements From Aircraft (four aircraft)	WT-1333
Bureau of Naval Weapons - Narrow-Band Infrared Spectral Irradiance of High Altitude Bursts (Operation Hardtack - airborne station)	WT-1651-2
SRI - Radar Clutter Measurements--Optical (ships)	POR-2028 Vol 4&5
Air Force Cambridge Res. Labs.et al - High Altitude Nuclear Detonation Optical Infrared Effects (aircraft)	POR-2035 Vol 1

BASE SURGE

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
AFSWP - Blast & Shock Measurements, Op. Jangle	WT-368
LRL - Pre. Summary Report of A Nuclear Cratering Experiment	POIR-1833
NOL - Base Surge Measurements by Photography, CASTLE	WT-903
NOL - Surface Phenomena, DOMINIC (Environment)	POR 2001
NOL - Upwind Extent of Base Surge at Test Baker, CROSSROADS	NOL TR 66-151

BOLTZMAN BURST

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
Oak Ridge Nat. Lab. - Neutron Dosimetry by Threshold Detector	WT-1417

BRAVO BURST

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
SRI - Crater Survey. Op. CASTLE	WT-920
NRDL - Chemical, Physical & RadioChemical Characteristics of the Contaminant	WT-917
ASEL - Gamma Rate vs Time	WT-913
NRDL - Nature & Extent of Internal Radioactive Contamination of Human Beings, Plants & Animals Exposed to Fallout	WT-936

BUSTER

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
AFOAT-1 Transport of Radioactive Debris from Op. Buster Jangle	WT-308
SWC-Special Weapons Command Participation in Op. Buster Jangle	SWC/HIST/OBS/1951
AWS-Air Weather Service Participation in Op. Buster	WT-342
AFSWP-Operation Buster	WT-412
LASL-Gamma Radiation Exposure as a Function of Distance	WT 408
NMRI-Radiation Dosimetry	WT-315
LASL-Radiological Safety	WT-125
LASL-Summary of Information on Gamma Radiation from Atomic Weapons	LA-1620
LASL-Measurement of Gamma Ray Intensity vs Time	WT-356
LASL-Staff Reports - Op. Buster Jangle	WT-421

BUTTERNUT BURST

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
Bu. Naval Weapons - In-Flight Structural Response of a 4D-1 Aircraft	WT-1635
Bu. Aeronautics - In-Flight Structural Response of FJ-4 Aircraft	WT-1636

CASTLE

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
AFOAT - Nuclear Calibration Analysis of Atomic Debris	WT-932
AFSWC - History of Task Group 7.4 Participation in Op. Castle	SWC-TG7.4-1
ARDC - Radiation Hazards During Atomic Warfare	ARDC-C4-23676
AFSWP - Fallout Symposium	AFSWP-895
AFSWP - Summary RPT of the Commander, Task Unit 13.	WT-934
Chemical & Radiological Lab - Radiochemical Analysis of Fallout	WT-918
Chemical Corps - Fallout Studies	WT916
Cook Electric Co. - Thermal Effects on B-47 Aircraft in Flight	WT-926
OCA - TG7.4 - Final RPT of the Commander Air Task Group 7.4	OCA TG7.4 (FR)
Tracer Lab - Particle Analysis of Nuclear Debris From Surface and near Surface Bursts 20 QTLY RPT	TRL TB 66-113
LASL - RPT of the Commander TG 7.1	LA/JQ-11
LASL - External Neutron Measurements	WT-952
LASL - Radiological Safety	WT-942
LASL - RPT of the Commander TG 7.1	WT-940
E, G&G - Communications - Operations CASTLE -	WT-941

CHECKMATE BURST

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
NDL - Alpha Contamination Monitoring (Resulting from Warhead Destruct)	POR-2052
SRI - Airborne Radar Observations During FISHBOWL (Incl. Aircraft Used)	SRI/4-1767
DAS - Organizational, Operational, Funding, Logistic & Scientific Summary - Op. DOMINIC	POR-2053

CMOS

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
RIT - Transient Surface Damage, Final Report	RTI-43-U-812

COAXIAL CABLES

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
SCDR - Sioux Vulnerability Experiments in the Platt Event, Nougat Series -	SCDR 165-62

COBALT ISOTOPES

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
DASA - Metabolic Changes in Humans Following Total Body Irradiation -	DASA - 1633
SAM - Radiation - Induced Central Nervous System Death	SAM-59-58
DASA - Neurophysiological and Behavioral Effects of Incidental Irradiation of "Normal" Humans, Final Report.	DASA-2378

CONTAMINATION

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
AFSWC - Technical Air Operations, Op. TEAPOT	WT-1206
AFSWP - HARDTACK Summary Report	AFSWP OH SR
AFSWP - Tests of Service Equipment & Operation, Op. JANGLE	WT-376
AFSWP - Shots Wagon & Umbrella, Op. HARDTACK Prelim Report	ITR-1658
AEC - Radioactive Contamination of Certain Areas in the Pacific Ocean from Nuclear Tests	AEC RCPO
Bkr. Sci. Resurvey - Tech. Report, Bikini Scientific Resurvey	XRD-212
Chem. War. Labs - Decontamination & Protection, Op. REDWING	WT-1312
Chem. War. Labs - A Historical Discussion of Contaminating Events Occurring During US Atomic Test Operations	CWLR-2176
AWRE - Op. TOTEM Decontamination of Radioactive Clothing	FWE-56
Nav. Med. Res. Inst. - Exposure of Marshall Islanders & Military Personnel to Fallout, Op. CASTLE	WT-938
NRDL - Protection & Decontamination of Land Targets & Vehicles	WT-400
RAND - Long Term Fallout Contamination from Surface Burst Nuclear Weapons	RAND RM-2393
Sandia - The Extent of Close-In Fallout From an Underground Nuclear Burst	SC-DR-64-1770
Sandia - Plutonium Contamination from One-Point Detonation of an XW-25, Op. PLUMBBOB	WT-1510
Eberline - Alpha Survey, Op. ROLLER COASTER	POR 2505

CROSSROADS

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
Technical report of AAF Instrumentation, Crossroads Project	OC/TG/ 1.5/TR
JTF-1, Atomic Bomb Tests, Final Report, Army Ground Task Group 1.4	OC/AG-
JTF-1 Historical Report: Atomic Bomb Tests A&B	OC/FR/7
JTF-1 Operational Report on Atomic Bomb Tests A&C	OC/CJTF-1/xrd/OP
JTF-1 Overall Summaries of Target Vessels: Tests A&B, ZV,	OC/BG/S10
JTF-1 Photogrammetric Plot of F-13&C-54 A/C Orbit Positions...	OC/MR-2
CJTF-1 Report of the Technical Director, Opn. Crossroads	OC/CJTF-1/xrd
JTF-1 Technical Report of Opn. Crossroads	OC/CJTF-1/xrd/TR
JTF-1 Tests A&B, Opn. Crossroads, Final Report, 5V, Buord Material Group	OC/OG
JTF-1 Test A&B, Op. Crossroads, Final Report, 2V., Final Report	OC/BG/S2
JTF-1 Test A&B, OPN. Crossroads, Final Report, ., 2 Vol, Final Report	OC/BG/S1
JTF-1 Test A, Opn. Crossroads, Final Report. BU Supplies and Accounts Gp.	
JTF-1 Tests A&B, Opn Crossroads, Final Report, BU. Yards & Docks	OC/FR/2
JTF-1 Tests A&B, Opn. Crossroads, BU. Aeronautics Gp.	OC/BG/S2a
JTF-1 USS Independence (CVL 22) Test A, 4V,	OC/BG/A15
Nav. Ord. LAB, Upwind Extent of the Base Surge, Test B,	NOL/TR/66-151
JTF-1 - Indices to & Sources of Basic Data for BUSHIPS Group Reports	OC/BG/5-14

CROSSTIE

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
AFWL - Air Force Experiment	POR 6264
AFWL - Air Force Experiment	POR 6279
DASA - Technical Directors Summary Report (DOORMIST)	POIR 6269
LMSC - Navy Experiments	POR 6262
LASL - Operation CROSSTIE	LA 4197
SW Rad. Health Lab - Off-Site Environmental Surveillance	PNE-327

BOWLINE

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
LASL - Operation Bowline	LA 4441

DANNY BOY BURST

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
UCRL - Cratering & Radioactivity Results from Nuclear Cratering Detonation in Basalt	UCRL-6999
Nuc. Defense Lab. - On-Site Fallout from a Partially Contained Nuclear Burst in a Hard Medium	POR 1819

DIAGONAL LINE

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
BRL - Neutron - Fluence and Gamma Exposure Measurements, Final Report.	POR-6489

DIAMOND DUST

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
DASA - Final Summary Report	POR-6435

DIAMOND SCULLS

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
AFWL - Minute Gun Series, Final Reports	POR-6714
AFWL - Rigid Body Momentum, Final Reports	POR-6717

DIANA MIST

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
AFWL - DIANA MIST Interim Summary Report	WL/OM/POISR

DOMINIC I

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
JTF8 - Technical Nuclear Safety Study of Project DOMINIC	SWC SWVNA 2-17
SWC - Analysis of Preliminary Results of 1961-1962 Nuclear Tests and Implications on USAF Systems	SWC SWOP 2-0445
Cook - Thermal Radiation from Air Burst Nuclear Weapons Incident on Low Altitude Aircraft	CEC P-3861 FR
DASIAC - BLUEGILL Phenomenology Rapid Interpretation	DASIAC SR-8
DASIAC - CHECK MATE Phenomenology Rapid Interpretation	DASIAC SR-7
DASIAC - KING FISH Phenomenology Rapid Interpretation	DASIAC SR-9
DASIAC - Operation FISH BOWL Technical Summary	DASIAC SR-6
DASIAC - TIGHT ROPE	DASIAC SR-10
D. Taylor Model Basin - Scientific Director's Summary Report	POR 2007
DASA - Flashblindness & Chorioretinal Burn Research	DASA-544
DASA/FC - Organizational, Operational, Funding, Logistic and Scientific Summary	POR-2053
JTF8 - Report by Commander JTF8 on the 1962 Pacific Nuclear Tests (Operation DOMINIC)	JTF-8/DOMINIC W.enc A-N
JTF8 - Report by Commander JTF8 to Chairman, USAEC, and Chairman, JCS, on 1962 Pacific Nuclear Tests	
LASL - The CHAMA Test of Follow-on Portion of Operation DOMINIC	LAMS-2804
LASL - Operation DOMINIC, CHECKMATE Preliminary Field Report	LA J-10 990
LASL - "Quick Look" at the Technical Results of BLUEGILL TRIPLE PRIME	LA JO-641
LASL - A Quick & Cursory Summary of the Christmas Island Portion of Operation DOMINIC	LAMS-2757
Nuc. Def. Lab, Edgewood - Gamma Radiation Measurements	POR 2013

DOMINIC I (Cont'd)

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
6570th Aerospace Med. Res. Lab - Production of Chorioretinal Burns by Nuclear Detonations & Tests of Protective Devices & Phototropic Materials	POR-2014 vol 1&2
SLL - CHETCO Event, Operation Dominic	SCDR 169-62
Tracerlab - Analysis of Particulate Debris from Pacific Air Shots	TRL TLW 5235
AFSWC - History of Air Force Participation in Operation DOMINIC	SWC HIST OD

DOMINIC II (SUNBEAM)

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
ASD/WPAFB F-100F/GAM 83B Simulation, Operation SUNBEAM includes A/C position	POR-2249
AFSWP Initial Gamma Rate Measurement	POR-2292
AFWL Radioisotope & Partice Size Characteristics of a Low Yield Surface Nuclear Detonation (includes A/C Cloud Penetration)	POR-2291
AFWL Tissue Dosimetry	POR-2270
AERDL - Measurement of Fast Neutron Dose Rate As A Function of Time	POR-2210
AERDL - Measurement of Gamma Dose Rate as a Function of Time	POR-2229
BRL - Shielding Effectiveness of Enclosure Shields in a Fallout Field (includes Fallout Measurements For 48 HRS (SMALL BOY)	POR-2221
EG&G - Aero Radioactivity Survey (SMALL BOY)	EG&G-1183-2060
AERDL - Residual Radiation in the Crater & Crater up Area of Low yield Nuclear Devices (LITTLE FELLER II & JOHNIE BOY)	POR-2267
NDL - Initial Radiation Measurements (SMALL BOY)	POR-2209
NRDL - Fallout Collection & Gross Sample Analysis (SMALL BOY)	POR-2215
NRDL - Fallout Sampling & Analysis: Radiation Dose Rate & Doserate Histories at 16 Locations (JOHNIES BOY)	POR-2289
NRDL - Gamma Radiation Characteristics-Angular Distribution Over a Desert Terrain Fallout Field	NRDL-TR-856
NRDL - Ionization Rate Measurements (SMALL BOY)	POR-2217
NRDL - Neutron Flux Measurements (includes flux vs ground Range)	POR-2264
NRDL - Radiological Surveys, Final Report	POR-2266

DOMINIC II (SUNBEAM) (CON'T)

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
AMDL - Transit Radiation Dose Rate (JOHNIE BOY & LITTLE FELLER II)	POR-2269
DASA - Organizational, Operational, Funding, & Logistic Summary (NOUGAT & SUNBEAM)	POR-2293

DESTROYERS-CONTAMINATION

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
NRDL - Shipboard Contamination Ingress from Underwater Bursts (includes WAHOO & UMBRELLA DATA)	WT-1620
NRDL - Shipboard Radiation From Underwater Bursts (Op. Hardtack)	WT-1619

DESTROYERS-EFFECTS OF ATOMIC EXPLOSIONS

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
BUSHIPS - Ship Damage Assessment & Technical Support of Test Elements, Op. DOMINIC	POR-2006
DTMB - Shock Loading in Ships from Underwater Bursts and Response of Shipboard Equipment (Identifies Target Ships) Op. Hardtack	WT-1627

DISCUS WHEEL

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
SLA - Scientific Director's Summary (Ferris Wheel Series)	POR-3000
SLA - Technical Directors Summary RPT. (Includes TINY TOT FERRIS WHEEL Series)	POR-3021
SLA - Technical Director Summary RPT. (Includes Shot RED HOT)	POR-3034

DOSAGE, DOSAGE RATES

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
AFCRC - The Radiation Hazards to Personnel Within an Atomic Cloud: UPSHOT-KNOTHOLE	WT-743
AF - Nuclear Radiations from Atomic Bombs, Effects & Shielding USAF	OA WP-10
AFSWC - Early Cloud Penetrations: REDWING	WT-1320
AERE (Harwell) - Nuclear Accident Dosimetry	AERE R 7485
AFSWC - Initial Gamma Radiation from an Atomic Weapon Air Burst in a Standard Atmosphere	SWC TN 53-2SWR
AFSWC - Prompt Doses & Dose Rates from Nuclear Weapons	SWC TR 58-13
AFSWC - Radiation Effects from New-Type Low-Yield Weapons	SWC TDR 62-58
AFSWC - Safe Levels of Contamination from Fission Products	SWC TN 56-2
AFSC - Systems Applications of Nuclear Technology: Initial Radiation Calculations and Effects on Personnel	AFSC M500-4
AFWL - Biological Dosimetry of Ionizing Radiation as Applied to Triage of Casualties Following a Thermonuclear Detonation	RTD TDR 63-3049
ARDC - Impact of Fallout on AF Operations	ARDC TR 56-1
ARDC - Radioactive Fallout from Contact Burst Megaton Bombs	ARDC C4-18098
Armour - Neutron Data Evaluation	ARF 1181-9
Boeing - Time Behavior of the Early Gamma Radiation from Surface Contact Nuclear Weapon Detonations	BOAC D290365
Army Chem. & Rad. Labs. - Maximum Allowable Concentrations of Fission Products in the Air as a Function of Exposure Time After Detonation	CRLIR-81

DOSAGE, DOSAGE RATES (Cont'd)

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
Army CRL - Radiological Estimation of Total Activity included within Dose-Rate Contours for BRAVO Shot: Op. CASTLE	CRLR 636
Army Chem. Warfare Labs - External Neutron Measurements 1952 thru 1958	CWLR2377
CWL - Gamma Dose from Very Low Yield Bursts	WT-1677
CWL - Neutron Flux from Large Yield Bursts	WT-1622
CWL - Neutron Flux from Selected Nuclear Devices: PLUMBBOB	WT-1412
CWL - Neutron Flux from Very Low Yield Bursts	WT-1679

DOSAGE RATES

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
DASA - Predicted Blast, Thermal, and Prompt Radiation Effects for the DAVY CROCKETT (includes Fig data)	DASA FC/09590643
LASL - Radiation Contours from Nuclear Weapons Detonations	LA-4220
NRDL - Early Dimensions and Radiation Intensities of the Radioactive Pool Resulting from Shot SWORDFISH	NRDL-7R-770
NRDL - Radiation Hazards to Aircrews Exposed to the Atomic Cloud of an Atomic Bomb Detonation	NRDL-379
NDL - Effects of the DAVY CROCKETT Type Nuclear Weapons (includes Ivy Flats Tactical Troop Orientation)	NDL-TR-64
Oak Ridge Lab - Radiation Dosimetry for Human Exposures, Op. PLUMBBOB	WT-1504
RAND - Residual Gamma Radiation from Surface Nuclear Explosions (includes JANGLES & IVY Shot Data)	RM-1177
RAND - Transport and Early Deposition of Radioactive Debris from Atomic Explosions (includes TUMBLER-SNAPPER and IVY Test)	R-265
Army Chem. Corps. NDL - Bibliography, with Abstracts, of Reports of Nuclear Defense Lab and its Predecessors	NDL-TR-25
AFWL - Aircraft Ionizing Doses and Dose Rates from Radioactive Clouds & Fallout Final Report	WL/TR/75-214
Army Signal R&D Lab - Operations of the Fallout Group of Project 50.3 (includes PLUMBBOB Data)	SRDL-TR-2088
DASA - Base Surge Radioactivity from Underwater Shots WAHOO & UMBRELLA	DASA-533TAR

DOSIMETRY

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
AFSWC - Initial Nuclear Radiation Information for Calculating Biological Dosage from Low Yield Nuclear Weapons	SWC TN 50-37
AFSWC - Nuclear Radiation Environment Resulting from Under- ground Detonations	SWC-TDR 62-150
AFSWP - Military Aspects of the Biological Effects of Radiation	AFSWP-611
AEC - Physical Measurements of Gamma & Neutron Radiation in Shelter & Instrumentation Evaluation	WT-789
Harwell - Nuclear Accident Dosimetry	AERE R 7485
UCLA - Measurement of Initial & Residual Radiations by Chemical Methods: Op. TEAPOT	ITR-1171
DASA - Technical Summary of Military Effects, Programs 1-9; Op. PLUMBBOB	WT-1445
NBS - Delayed Gamma-Ray Measurements: Op. GREENHOUSE	WT-81
Nav. Med. Res. Inst. - Gamma Depth Dose Measurement in Unit-Density Material: Op. SNAPPER	WT-529
Nav. Med. Res. Inst. - Radiation Dosimetry: Op. BUSTER	
NRDL - Physical Factors & Dosimetry in the Marshall Island Radiation Exposures: Op. CASTLE	WT-939
REIC - Dose-Rate Effects in Radiation Damage	RECI Memo 3C

DOSIMETRY (Cont'd)

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
AF School Av. Med. - Radiation Measurements Utilizing the USAF Chemical Dosimeters. Op. PLUMBBOB	
SRI - Beta Dosimetry for Fallout Hazard Evaluation	SRI EGU 8013
SRI - Beta Radiation Dosimetry for Fallout Exposure Estimates	SRI 7402
ANDL - Integrated Gamma Dose Measurements: SUNBEAM	POR 2265
DASA - Interim Summary Report: ROLLER COASTER	POIR-2500

EASY BURST-FALLOUT

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
NRDL - Interpretation of Survey Meter Data, Annex 6.5, Scientific Directors Report - Op. Greenhouse	WT-26

EASY BURST-GAMMA RADIATION

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
NRL - Prompt Gamma-Ray Measurements, Part II, Prompt Gamma vs Time, Annex 1.1, Scientific Directors Report, Op. Greenhouse	WT-36

EFFECTS OF ATOMIC BLAST

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
WADC - Airplane F-101-Effects of Atomic Blast	WADC/TN-56-523
WADC - In-Flight Participation of an F-101A Aircraft	WT-1332
NRDL - Measurement of Thermal Radiation Incident on USAF Aircraft in flight, Op. REDWING	NRDL-TR-330

EFFECTS EXPERIMENTS

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
AFWSP - Final Report - Operation SNAPPER	WT-564

FALLOUT

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
AFSWC - Contamination of Water Supplies by Radioactive Fallout	SWC TN 58-7
AFSWC - Water Contamination in Fallout Areas	SWC TN 59-1
Army Chem. Corps Nuc. Def. Lab - Particle Studies of Fallout from a Very Low Yield Weapon, HARDTACK	NDL-TR-39
AEC - Radioactive Fallout - A Two Year Summary Report	TID 5550
AEC - Radioactive Fallout from Nuclear Detonation of February and April 1960	TID 6235
AEC - Remote Radiological Monitoring, PLUMBBOB	WT-1509
AEC - Some Effects of Ionizing Radiation on Human Beings	TID 5358
BRL - Electron Microprobe Analysis of Fallout Particles from 4 US Nuclear Detonations	BRL-1611
BUSHIPS - Standard Recovery Procedure for Tactical Decon- - tamination of Ships	WT-1323
UCLA - Distribution, Characteristics and Biotic Availability of Fallout, Op. PLUMBBOB	WT-1488

FALLOUT (Cont'd)

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
Chem. & Rad Labs - Maximum Allowable Concentrations of Fission Products in Air as a Function of Exp. Time After Detonation	CRLIR-81
Chem. & Rad Labs - Radiological Estimation of Total Activity Included with Dose-Rate Contours, Op. CASTLE	CRLR-636
Chem. War. Labs - Alpha Contamination Studies PLUMBBOB & HARDTACK	CWLR 2385
CWL - Land Fallout Studies, Op. REDWING	WT-1319
DASA - Fallout Phenomenology, CROSSROADS	DASA 2003
DASA - Radioactive Fallout from Nuclear Explosions	DASA 1188
DASA - Tech. Summary of Military Effects Programs, REDWING	WT-1344
EG&G - Ecological and Environmental Effects for Local Fallout from Schooner	PNE-526
Ford - Contributions to Fallout from Neutron Activated Soil	DASA-1562
AWRE - Gamma Radiation Studies & Decontamination Experience	FWE-7
AWRE - Op. BUFFALO: The Aerial Survey of Radioactivity Deposited on the Ground	FWE-147
AWRE - Fallout Surveys	FWE-173
NIH - Nature & Distribution of Residual Contamination, JANGLE	WT-386
LASL - Activities of the Special Weather Advisor Service TUMBLER-SNAPPER	WT-552
LASL - Activities of the Special Weather Advisor Service UPSHOT-KNOTHOLE	WT-705

FALLOUT (Cont'd)

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
LASL - Report of Fallout Study of January 1956	LAMS-2033
LASL - Report of the Advisory Personnel to the Air-Sampling Program, TUMBLER-SNAPPER	WT-566
LASL - A Summary of Test Results, Op. RANGER	LAMS-1240
NRDL - Analysis of Fallout Data; CASTLE	NRDL TR-223
NRDL - Analysis of Gamma Radiation from Fallout: TEAPOT	NRDL-TR-106
NRDL - Contamination Patterns at Op. JANGLE	NRDL-399
NRDL - Distribution & Intensity of Fallout, CASTLE	WT-915
NRDL - Distribution & Intensity of Fallout from the Underground Shot, TEAPOT	WT-1154
NRDL - Fallout Studies & Assessment of Radiological Phenomena PLUMBBOB	WT-1465
NRDL - Gamma Radiation Field Above Fallout Contaminated Ground, TEAPOT	WT-1225
NRDL - Local Fallout from Nuclear Test Detonations	DASA 1251
NRDL - Nature, Intensity & Distribution of Fallout from MIKE, Op. IVY	WT-615
NRDL - Predicted Radiological Effects for 3 Underwater Nuclear Detonations (HARDTACK)	NRDL-TM-69

FALLOUT (Cont'd)

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
AEC-NYO - Measurements of Beta & Gamma Ray Characteristics of Shot Debris & Fall-out of Nuclear Weapons, TEAPOT	ITR-1185
OFF of Spec. Weap. Dev. - Prediction of Radioactive Fallout	OSWDD 55-19-W/C1
RAND - Catalog of Fallout Patterns	RAND RM-1676 AEC
RAND - Close-in Fallout	RAND R-309
Sandia - Residual Contamination from Nuclear Bursts	SC-3465 (TR)
Sandia - Summary Report TG57, Op. PLUMBBOB	ITR-1515
Scripps - Distribution of Radioactive Fallout by Survey Analysis of Sea Water: CASTLE	WT-935
Scripps - Fallout Studies by Oceanographic Methods: REDWING	WT-1316
Army Sig. Eng. Labs - Gamma Radiation Exposure: CASTLE	WT-912
SRI - Beta Dosimetry for Fallout Hazard Evaluation	SRI EGU 8013
SRI - Mass Contour Ratio for Fallout & Fallout Specific Activity of SHOT SMALLBOY	NRDL TRC 68-15
URS - Some Properties of Radioactive Fallout: PRISCILLA	URS 757-4
URS - Some Properties of Radioactive Fallout: COULOMB C	URS 757-5
URS - Some Properties of Radioactive Fallout: DIABLO & SHASTA	URS 757-3
Weath. Bur. - Fallout Patterns from Op. HARDTACK	WB-LA-3

FLASH BLINDNESS

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
Aerospace Med. Res. Lab - Analysis of the First Thermal Nuclear Pulse and Associated Eye Effects	AMRL/TR/67-214
Continental Army Comd - Effect of Light from Very Low Yield Nuclear Detonations on Vision of Combat Personnel, Op. HARDTACK.	WT-1664
Nat. Cash Register Co - Nuclear Flash Early Time Histories, Op. DOMINIC (C-54 and C-118 Aircraft)	AMRL-TDR-63-73
School of Aviation Medicine - Flash Blindness (personnel with and without Protection), Op. BUSTER	WT-341
School of Aviation Medicine - Flash Blindness (personnel Exposed to Flash) Op. SNAPPER	WT-530
School of Aviation Medicine - Ocular Effects to Thermal Radiation from Atomic Detonations (12 persons exposed) Op. UPSHOT-KNOTHOLE	WT-745

FLATHEAD BURST

<u>TITLE</u>	<u>LOCATION</u>	<u>LIBRARY</u>
Sig. Eng. Labs - Ionospheric Effects of Nuclear Detonations (A/C Flying under Radiation Cloud)		WT-1337
BU AIR-NAVY - Airborne High Resolution Spectral Analysis, Op. REDWING (Aircraft Participation)		WT-1342

GAMMA RADIATION

SC - Residual Contamination from Nuclear Bursts	SC-3466 (TR)
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GREENHOUSE

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
Atmospheric Conductivity (includes magnitude, direction & velocity of fallout).	WT-71
Radiological Safety, Greenhouse Scientific Directors Report Annex 9.3	WT-89
Staff Reports, Parts I-IV (includes Personnel & Admin.)	WT-98
Summary of Visible Damage to a/c During Op. Greenhouse (manned a/c)	MIT-AE-97
Contamination - Decontamination Studies	WT-27
Fallout Phenomenology.	WT-4
Radiation Hazards to Aircrews Exposed to the Atomic Cloud...	NRDC-379
Transport 7 Early Deposition of Radioactive Debris...	R-265
Part IV TV 3.1.4, Part VII Admin	WT-39
Sandia Corp. Proving Ground Group	WT-102
History of Opn. Greenhouse	WT-47
History of Opn. Greenhouse	WT-48
Operation Greenhouse - Meteorology	WT-49
Neutron Measurements, Annex 1.5 Scientific Directors Report	WT-68
Prompt Gamma-ray Measurements, Annex 1.1 of Scientific Directors Report	WT-66

HARD TACK I

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
AFSWC - Gamma Radiation and Induced Activity from Very Low Yield Bursts	WT-1681
AFSWP - Hard Tack Summary Report	AFSWP OH/SR
AFSWP - Two Underwater Nuclear Test Detonations	ITR-1658
ASRDL - X-Band Radar Determination of Nuclear Cloud Parameters	WT-1640
ACWL - Residual Radiation From A Very Low Yield Burst	WT-1678
DASA - Base Surge Radioactivity From Underwater Shots	DASA-533 TAR
JTF.7 - Report of the Commander TG 7.1	WT-1682
NRDL - Fallout Measurements By Aircraft and Rocket Sampling	WT-1625
SANDIA CORP - Fallout Contamination From A Very Low Yield Burst	WT-1602
DASA - Technical Summary of Military Effects Programs 1-9.	ITR-1660
UCID - Composite Yields. Radiochemistry Ratios and Efficiencies.	UCID-4290

HARD TACK II-

UCID - Composite Yields. Radiochemistry Ratios And Efficiencies	UCID-4291
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INDIRECT BOMB DAMAGE ASSESSMENT

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
Advance Industries Inc. - Airborne Antennas and Photo Tubes for Determination of Nuclear Weapon Yield, Op. REDWING (A/C Participation)	WT-1352
BUAIR - Test of Airborne Naval Radars for IBDA, Op. TEAPOT (AJ-2 and R4D-5Q Aircraft Participation)	WT-1142
WADC - Operational Test of Radar and Photographic techniques for IBDA, Op. SNAPPER (A/C Participation)	WT-534
WADC - Test of IBDA Equipment, Op. TEAPOT (B-50, B-17, F-94 Aircraft)	WT-1141

IMPLOSION WEAPONS

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
Aerospace Corp. - Gamma Radiation Incident on a Weapon System During Fly-through of Debris Cloud	SAMSO/TR/71-74

INDUCED RADIOACTIVITY

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
Army Sig. R&D Lab - Initial Gamma Radiation Intensity and Neutron Induced Gamma Radiation, Op. PLUMBBOB (Aircraft & Armored Tanks)	WT-1414
NOL - Blast Measurements Part IV (includes Scientific Dir's RPT) Op. Greenhouse.	WT-53

INFRARED RADIATION

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
DASIAC - Fishbowl Rapid Interpretation Group (includes Locations of Ships, Aircraft)	DASIAC SR-2
BU NAV WEAPONS - Narrow Band Spectral Irradiance of High Altitude Bursts, Op. HARDTACK (P2-V Aircraft Participation)	WT-1651-1

IVY

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
SWC-Task Group 132.4, Final Report, Operation IVY	01/TG132.4/FR
Fallout Gamma Ray Intensity, Operation IVY	WT-649
LASL-Gamma Radiation as a Function of Distance, Op. IVY	WT-643
RAND-Transport & Early Deposition of Radioactive Debris from Atomic Explosives	R-265
JTF-132-Radiological Safety, Op. IVY.	WT-614
LASL-Personnel & Administration, Op. IVY.	WT-636
JTG132.1 Report of the Commander JTG 132.1, Op. IVY	WT-608
LASL- Gamma Radiation vs Time	WT-634

IVY PROJ 5.1 AND 5.2

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
LASL - Gamma Radiation vs Time, Op IVY	WT-634

IVY ADMIN AND ORGANIZATION

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
LASL - Report of the Commander, Op. IVY	WT-605

JANGLE

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
AFOAT-1 Aerial Survey of Distant Contaminated Terrain	WT-330
AFOAT-1 Radiochemical, Chemical, & Physical Analysis of a Bomb Debris	WT-320
AWS-Air Weather Service Participation in Op. Jangle	WT-361
AFSWP-Monitor Survey of Ground Contamination	WT-381
AFSWP- Summary Report - Weapons Effects Tests - Op. Buster Jangle	WT-414
BUAIR/WADC-Aerial Survey of Local Contaminated Terrain, Op. Jangle	WT-370
Dept. of Agric.-Analysis of Test Site & Fallout Material, Op. Jangle	WT-371
ERDC- Foxhole Shielding of Gamma Radiation, Op. Jangle	WT-370
NRDL-Analysis of Fallout Data, Part I.	NRDL/TR/220
NRDL Analysis of Fallout Data, Part II,	NRDL/TR/221
NRDL Analysis of Fallout Data, Part III.	NRDL/TR/222
NRDL-Beta-ray & Gamma-ray of Residual Contamination	WT-372
NRDL-Nature & Distribution of Residual Contamination II, Op. Jangle	WT-373
Signal Corps-Total Dosage, Op. Jangle-	WT-331
ARDC-Radiation Hazards during Atomic Warfare,	ARDC/C4/23676
AFOAT-1-Transport of Radioactive Debris, Op. Buster Jangle	WT-308

JOHNNIE BOY BURST

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
Calif. Res & Technology Inc. - Early Lifted Cloud Characteristics and Gamma Source Distributions for two Shallow-Buried Bursts	DNA-4256F

LACROSSE BURST-GAMMA RADIATION

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
Army Sig. Engineering Labs - Gamma Exposure vs Distance, Op. REDWING	WT-1310

LASSEN BURST-GAMMA RADIATION

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
Army Sig. R&D Lab - Initial Gamma Radiation Intensity & Neutron-Induced Gamma Radiation of NTS Soils.	WT-1414

LIGHT (VISIBLE RADIATION)

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
WASC - Instrumentation for Measurement of Thermal Radiation, Op. IVY (Airborne Instruments)	WADC TR 53-210
School of Aviation Medicine - Flash Blindness, Op. BUSTER (test subjects with and without protective Devices)	WT-341
Naval Applied Science Lab - Spectral Irradiance and Radiant Exposure Histories of BLUE GILL, Op. FISHBOWL (5 Aircraft Stations)	NASL/9400-12TM3
NRL - Thermal Radiation Measurements Parts I, II, III (of Scientific Directors Report) Op. GREENHOUSE.	WT-120
KOLLSMAN Inst. Corp. - Radiance Measurement of KINGFISH, Op. FISHBOWL (aircraft stations)	KIC/GAD-ER 10 22880

MIGHTY SKY

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
AFSWC - AFSWC Support of Project BLUE ROCK, Test Report	SWC/SWT/TR/66-1
DASA - BLUE ROCK	DASA-25270
DASA - BLUE ROCK Final Report	DASA 1974

MIKE BURST

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
RAND - Residual Radiation from Surface Nuclear Exposions	RM-1177
AFOAT-1 - Radiochemical and Physical Analysis of Atomic Debris	WT-645

NOUGAT

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
AFSWC - Neutron Spectrum and Total Gamma Dose	POR-1848
AFSWC - Operation Nougat	SWC SWOP- 1-2134
AFSWC - X-Ray Counter Measures, Final Report	POR-1854
UNIV OF CALIF - Some Radiological Observations and Characteristics of Fallout Debris - Danny Boy	POR-1818
DOD - DOD participation in AARDVARK EVENT	VESIAC-C76-VU
DOD - DOD participation in AARDVARK EVENT	VESIAC-C66-VU
DOD - DOD participation in AMADILLO EVENT	VESIAC-C28-VU
DOD - DOD participation in BLACK EVENT	VESIAC-C68-VU
DOD - DOD participation in CHINCHILLA EVENT	VESIAC-C33-VU
DOD - DOD participation in CIMMARON EVENT	VESIAC-C29-VU
DOD - DOD participation in CODSAW EVENT	VESIAC-C32-VU
DOD - DOD participation in DEAD EVENT	VESIAC-C36-VU
DOD - DOD participation in EEL EVENT	VESIAC-C58-VU
DOD - DOD participation in ERMINE EVENT	VESIAC-C31-VU
DOD - DOD participation in HOOSK EVENT	VESIAC-C35-VU
DOD - DOD participation in MINK EVENT	VESIAC-C2110-VUO
DOD - DOD participation in PACA EVENT	VESIAC-C67-VU
DOD - DOD participation in PLATPUS EVENT	VESIAC-C30-VU
DOD - DOD participation in SACRAMENTO EVENT	VESIAC-C77-VU
LASL - Summary of Yield Data Operation Nougat	LA-3145-MS
ARMY CHEMICAL CORPS - On-site Fallout from a Partially Contained Nuclear Burst in a Hard Medium	POR-1819
Reynolds, Elec & Eng - On Site Ras-Safe Report	WT-1832
DASA - Organizational, Operational, Funding & Logistics Summary	POR-2293

NAVAJO BURST - GAMMA RADIATION

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
LASL - Gamma Radiation as a Function of Distance, Op. REDWING	WT-1361
Army Sig. R&D Lab - Gamma Exposure Rate vs Time	WT-1311

NOUGAT-VETA UNIFORM PROGRAM

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
DOD - DOD Participation in Chinchilla II Event	VESIAC-C34

OPERATION REPORTS (ATOMIC WEAPON TESTS - ADMIN & ORG.)

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
LASL - GREENHOUSE HANDBOOK of Nuclear Explosions	WT-103
LASL - Report of the Test Director: Op. TEAPOT	LA 1966

PACIFIC PROVING GROUND

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
WADC - B-57B Operation REDWING Data, Vol 1,	WADC-TN-56-465

PALAUIN BURST

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
REECO - On Site Radiological Survey Report	PNE-911F

PARTICLE INHALATION

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
Naval Medical Research. Inst. - Study of Response of Human Beings Accidentally Exposed to Significant Fallout Radiation, Op. CASTLE	WT-923

PERSONNEL DECONTAMINATION

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
Office Quartermaster Gen. - Protective Clothing and Clothing and Personnel Decontamination, Op. GREENHOUSE ANNEX 6.9, Sci. Directors Report	WT-12

PLUMB BOB

E, G&G - Gamma Dosimetry By Film-Badge Techniques Project 39.1a	WT-1466
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WEAPONS TEST REPORTS-OPERATION PLUMBBOB

	<u>AGENCY</u>	<u>WT/POR</u>	<u>P/O</u>
1.1	BRL	1401	E. J. Bryant
1.2	NOL	1402	P. Hanlon
1.3	SRI	1403	L. M. Swift
1.4	SRI	1404	L. M. Swift
1.5	SANDIA	1405	WM. R. Perret
1.7	AFSWC	1406	W. H. Bultmann
1.8a,c	BRL	1407	E. J. Bryant L. M. Swift
1.8b	BRL	1408	E. J. Bryant
1.8c	SRI	Included in 1407	L. M. Swift
1.9	AFBMO	1487	J. F. Halsey
2.1	CWL	1410	Philip W. Krey
2.2	NRDL	1411	C. S. Cook
2.3	CWL	1412	David L. Rigotti
2.4	CWL	1413	Robert C. Tompkins
2.5	SCEL	1414	G. Carp
2.6	SCEL	1415	A. E. Cohen
2.7	NRL	1416	T. R. Hanscome
2.8	NML	1417	E.J. Dilanni
2.9	AFSWC	1418	Kermit C. Kaericher
2.10	AFSWC	1419	E. N. York
PROG 2	NOT AVAILABLE	1514	John A. Chiment
3.1	WES	1420	W. J. Flathau
3.2	BUDUCKS	1421	G. H. Albright

WEAPONS TEST REPORTS-OPERATION PLUMBBOB (CON'T)

	<u>AGENCY</u>	<u>WT/POR</u>	<u>P/O</u>
3.3	NCER & EL	1422	G. H. Albright
3.4	AFSWC	1423	E. H. Bultmann, Jr
3.5	SRI	1424	R. B. Vaile, Jr
3.6	AFSWC	1425	E. H. Bultmann, Jr
3.7	BRL	1426	J. J. Meszaros
3.8	WES	1427	T. B. Goode
4.1	WRAIR	1428	G. M. McDonnell
4.2	WADC	1429	Wayne E. Gulley
5.1	BUAIR	1430	J. H. Walls
5.2	BUAIR	1431	D. A. Gilstad
5.3	BUAIR	1432	A. M. Julian
5.4	BUAIR	1433	J. H. Walls
5.5	WADC	1434	G. Stack
6.1	ERDL	1435	F. E. Deeds
6.2	DOFL	1436	P. H. Haas
6.2a	DOFL	1489	P. H. Haas
6.3	NADC	1437	William S. Lee
6.4	AFCRC	1438	Richard A. Noughten
6.5	WSPG	1439	G. W. Elder
8.1	QMRDC	1440	Frank H. Babers
8.2	NML	1441	W. L. Dirksen
8.3a	NRDC	1442	William B. Plumb

WEAPONS TEST REPORTS-OPERATION PLUMBBOB (CON'T)

	<u>AGENCY</u>	<u>WT/POR</u>	<u>P/O</u>
8.3b	WADC	1443	Charles J. Cosenza
	Summary Report of Dir.	1445	
PROG 9	LML, EG&G		

PLUMBBOB WEAPON TEST REPORTS

The following Weapon Test Reports (WT) give references to useful information about each DOD Experiment as may be helpful in the NTPR:

WT-1401, Project 1.1 Basic Airblast Phenomena
E. J. Bryant
J. H. Keefer

- 1 - A blast and shock experiment that participated on 10 shots: Franklin, Wilson, Priscilla, Hood, John, Kepler, Owens, Sotkes, Shasta, Gallileo.
- 2 - No radiation was measured but recovery of records from close-in gages probably resulted in small exposures to project personnel. pg.31 gives gage locations on Priscilla - (most heavily instrumented).
pg.96 " " " on all events.

WT-1402, Project 1.2 Field Test of a System for Measuring Blast Phenomena by Airborne gages.
P. Halon J.S. Ives U.S. Naval Ordnance Lab.
S. E. Cooper G. S. Scholl

- 1 - Involved rocket & balloon borne pressure instruments and photo stations to triangulate gage positions on balloon tethers.
- 2 - Station layouts given in NTS coordinates-gages recovered after shot.
- 3 - Participated on two shots: Kepler and Owens.

WT-1403, Project 1.3 Airblast Phenomena in the High Pressure Region
L.M. Swift SRI Field Party- V. E. Krakow
D.C. Sachs C.M. Westbrook
A.R. Kriebel R.V. Ohler
Field Supervisor- W.M. Wells H.C. Waner
" Chief - L.H. Inman R.E. Aumiller
J. Milless

- 1 - Project participated on one event - Priscilla
- 2 - Gage layout given - gages hard-wired to recorders.

WT-1404, Project 1.4 Ground Acceleration, Stress, and Strain at High Incident Overpressures.
L.M. Swift Field Chief= L.H. Inman J. Milless

PLUMBBOB WEAPON TEST REPORTS (CON'T)

D.C. Sachs
F.M Sauer

Asst. Field Chief= W.M. Wells
Field Party: R.E. Aumiller
V.E. Krakow

R.V. Ohler
C.M. Westbrook
H. Wuner

- 1 - Part of report included in WT-1407.
- 2 - Project participated on one event - Priscilla.
- 3 - Various stress & strain gages were hard-wired to central station.
- 4 - Report gives gage layout from 450ft to 1350ft.

WT-1405, Project 1.5 Ground Motion Studies at High Incident Overpressure.
W.R. Perret and Sandia Labs personnel.

- 1 - Participated on one event - Priscilla.
- 2 - Report gives gage range from GZ and depth.

WT-1406, Project 1.7 Loading on Simulated Buried Structures at High Incident Overpressures.

E.H. Bultmann ARDC

- 1 - Project participated on one event - Priscilla.
- 2 - Used buried instrument drums - no manned stations.
- 3 - Drums were recovered for data.

WT-1407, Project 1.8a and 1.8c Effects of Rough and Sloping Terrain on Airblast Phenomena.
E. J. Bryant BRL/SRI
L. M. Swift

- 1 - Project participated on one event-Smoky.
pg.6 gives list of BRL personnel

Fig 2.5 gives Field layout of gages relative to GZ.
pg.201-208 Photos of tower and gage lines
pg 131 - Map.

WT-1408, Project 1.8b Effects of Rough Terrain on Drag-Sensitive Targets
E.J. Bryant BRL

- 1 - Project participated on one event-Smoky.
- 2 - Involved deployment of vehicles-layout given in report.

PLUMBBOB WEAPON TEST REPORTS (CON'T)

WT-1487, Project 1.9 Spectra of Ground Shocks Produced by Nuclear Detonations
J.F. Halsey - ARDC

- 1 - Project participated on Stokes, Smoky, Newton, Whitney, & Charleston.
- 2 - Used reed gages for shock spectra
- 3 - pg.13 Describes gage placement.

WT-1410, Project 2.1 Soil Activation by Neutrons
Philip W. Krey Radiological Division
Edward G. Wilsey U.S. Army Chemical Warfare Lab.
John H. McNeilly
Doris D. Peterson
Ernest W. Blooze

- 1 - Project participated on Franklin, Lassen, Wilson, Priscilla, & Owens.
- 2 - Core samples removed post shot by a 1000' cable.
- 3 - Report gives flux, levels, and decay rates - also gamma scattering data, gage locations for all 5 events.

WT-1411, Project 2.2 Neutron Induced Activity in Soil Elements
C.S. Cook R.L. Mather U.S. Naval Radiological
W.E. Thompson J.M. Ferguson Laboratory
F.M. Tomnovec P.R. Howland

- 1 - Project participated on Wilson, Hood, Owens, LaPlace.
- 2 - Pg.17 gives details of device environment
- 3 - Pg 23-24 details of helicopter and ground crew sample recovery.
- 4 - Pg.24 some samples removed 16 min. after event by ground crews.
- 5 - Pg.38 gives results.

WT-1412, Project 2.3 Neutron Flux from Selected Nuclear Devices
David L. Rigotti Herbert O. Funsten U.S. Army Chemical
John W. Kinds Benjamin B. Binkowski Warfare Laboratory

- 1 - Project participated on Franklin, Lassen, Wilson, Priscilla, Hood, John, Owens, Smoky, LaPlace.
- 2 - Pg.16 gives procedure for recovery of detectors from radex field.
- 3 - Pg 17-19 gives location of detectors for each of nine events.
- 4 - Pg.21 gives map of detector layout-Smoky
- 5 - Pg.34 gives results.

PLUMBBOB WEAPON TEST REPORTS (CON'T)

WT-1413, Project 2.1 Neutron and Initial Gamma Shielding

Robert C. Tompkins U.S. Army Chemical Warfare Laboratory
Clayton F. Weaver
Gerald A. Peterson

- 1 - Project participated on: Franklin, Lassen, Wilson, Priscilla, Hood & Owens.
- 2 - Measured Shielding afforded by trenches & shelters in NTS soil.
- 3 - Responsibilities: Ordnance Equipment - Edward J. Bryant-BRL
Field Fortifications- William H. Van Horn-ERDL/Desert Rock
Gamma Measurements-Gerald W. Carp-ESL
Chemical Dosimetry-Sanford C. Sigoloff-SAM
- 4 - Project Personnel- Joseph C. Maloney 2nd LT. H. Craig Miller-ERDL
Carl Crisco Pfc. L. Neil MacKinnon-BRL
Capt. David W. Einsel, Jr. (CWL)
- 5 - Pg.15 gives shot participation & area of NTS.
- 6 - Pg.63 gives description of fortifications & shelters.

WT-1414, Project 2.5 Initial Gamma Radiation & Neutron-Induced Gamma Radiation of NTS Soil.

C. Carp	B. Markow	U.S. Army Signal Research
O. Johnson	F. Lavicka	& Development Laboratory
T. Baldwin	W. McAfee	
R. Larrick		

- 1 - Project participated on: Boltzman, Franklin, Lassen, Wilson, Hood, John & Owens
- 2 - To determine initial gamma intensity vs time and distance from 1 msec to 20 Sec. Also to measure neutron-induced gamma as a function of time. Initial gamma on John shot is included
- 3 - Pg 15-87 = Initial gamma data.
- 4 - Pg 85-93 = Neutron-induced gamma data.

WT-1415, Project 2.6 Evaluation of New Types of Radiac Instruments

A.W. Cohen	W.J. Ramm	U.S. Army Signal
M.H. Jachter	H.J. Reilly	R&D Laboratory
LT. D. K. Koehler, USA	C.R. Siebentritt	
H.M. Murphy		

- 1 - Project participated on Franklin, Lassen, Wilson, Priscilla & Hood.

PLUMBBOB WEAPON TEST REPORTS (CON'T)

2 - Pg 19-20 describes recovery of dosimeters at H + 4Hrs. on all events-gives locations.

3 - Pg.31 -describes post-Hood Surveys using the 1M-123 meter.

WT-1416, Project 2.7 Investigation of Effects of Nuclear Detonations on
Electromagnetic Wave Propagation & Nuclear Radiation
Detector Design.

T.D. Hanscome	W.E. Kunz	U.S. Naval Research Lab.
P.A. Caldwell	C.A. Pearse	
S.G. Gorbics	C.M. Stout	
E.C. Jones		

1 - Project participated on : Boltzman, Lassen, Wilson, Priscilla, Hood, Diablo, Kepler, Owens.

2 - Pg.29 gives instrument plan.

3 - Pgs 48, 59-63, 68-72 gives gamma ray data.

4 - Note-Should not have exposed project personnel to Radex areas.

WT-1417, Project 2.8 Evaluation of Military Radiac
E.J. DiIanni U.S. Naval Material Laboratory
F.C. Riffin

1 - Project participated on: Wilson, Priscilla, Hood, Diablo.

2 - Involved placement of instrumented masonite phantoms in high radiation fields (50 R/hr).

WT-1418, Project 2.9 Nuclear Radiation Received by Aircrews Firing the
MB-1 Rocket

Capt. Kermit C. Kaericher, USAF	Air Force Special Weapons
Capt. Iedd P. Martin, USAF	Center
1st LT. James E. Banks, USAF	

1 - Project participated on the John shot.

2 - a/c instrumented for gamma & neutron dose.

3 - Crew received less than 5 Rep Neutrons & 3R Gamma.

WT-1419, Project 2.10 Initial Neutron & Gamma Air-Earth interface
Measurements

Capt. E.N. York, USAF	Air Force Special Weapons Center
Capt. R.E. Boyd, USAF	
1st LT. J.A. Blaylock, USAF	

PLUMBBOB WEAPON TEST REPORTS (CON'T)

- 1 - Project participated on: Boltzman, Lassen, Wilson, Hood, Diablo, John, Kepler, Owens, Laplace.
- 2 - Pg.16 gives summary of gages & distances (and altitudes) from bursts.
- 3 - Personnel should not have been in radex areas.

WT-1420, Project 3.1 Blast Loading & Response of Underground Concrete-Arch Protective Structures
W.J. Flathaw U.S. Army Engineer Waterways Experiment
R.A. Breckenridge U.S. Naval Civil Engineering Laboratory
C.K. Wiehle

- 1 - Project participated on Priscilla only.
- 2 - Although a structures experiment, effects of radiation on film and recording paper was measured in the 50-200 psi range of Priscilla.
- 3 - pg.123 gives table of results
- 4 - pg.18 gives project plot plan.

WT-1421, Project 3.2 Evaluation of Buried Conduits as Personnel Shelters
LT. JG. G.H. Albright, USN Bureau of Yards & Docks
LCDR J.C. LeDoux, USN &
LTJG R.A. Mitchell, USN U.S. Naval Civil Engineering Lab.

- 1 - Project participated on Priscilla.
- 2 - Although a structures Experiment, buried conduits were instrumented with gamma film packets, chemical neutron dosimeters, and neutron threshold devices - pg.28.
- 3 - Results are tabulated on pg.66.

WT-1442, Project 3.3 Evaluation of Buried Corrugated Steel Arch Structures and Associated Components.
LTJG. G.H. Albright, USN Bureau of Yards & Docks
LCDR J.C. LeDoux, USN &
LTJG. R.A. Mitchell, USN U.S. Naval Civil Engineering Lab.

- 1 - Project participated on Priscilla.
- 2 - Primarily a structures Experiment but buried structures were also instrumented for prompt gamma & neutron radiation.

PLUMBBOB WEAPON TEST REPORTS (CON'T)

- 3 - Pg.12 gives a plot plan for the structures.
- 4 - Pg 100-106 describes interior and free-field radiation and summarize results.

WT-1423, Project 3.4 Blast Effects on Existing Upshot-Knothole and Teapot Structures.

Capt. E.H. Bultmann, Jr., USAF
Eugene Sevin
T.H. Schiffman

Armor Research Foundation
Structures Div., Research Directorate
AFSWC

- 1 - Project participated on Priscilla.
- 2 - Test of existing structures-no useful data on radiation.

WT-1424-1, Project 3.5a Isolation of Structures from Ground Shock
R.B. Vaille, Jr. Stanford Research Institute

- 1 - Project participated on Priscilla.
- 2 - No useful information for NTPR.

WT-1425, Project 3.6 Full-Scale Field Tests of Dome & Arch Structures

Capt. E.H. Bultmann Jr, USAF
T.G. Morrison
M.R. Johnson

Mechanics Research Division
American Machine & Foundry
AFSWC

- 1 - Project participated on Priscilla.
- 2 - No useful NTPR information.

LTR-1426, Project 3.7 Instrumentation of Structures for Air-Blast and Ground-Shock Effects

J.J. Meszaros
H.S. Burden
J.D. Day

Ballistics Research Laboratory

- 1 - Project participated on Priscilla.
- 2 - Provided Air-blast and ground shock instrumentation in support of other structures experiments. No radiation measurements made.
- 3 - No useful NTPR data.

WT-1427, Project 3.8 Soil Survey & Backfill Control in Frenchman Flat.

T.B. Goode
W.G. Shockley

R.W. Cunny
W.E. Strohm Jr.

U.S. Army Engineer
Waterways Experiment Station

- 1 - This project participated on Priscilla.

PLUMBBOB WEAPON TEST REPORTS (CON'T)

2 - Project was in support of underground structures of Programs 1, 3, and 6, to assure that the backfill procedures assured pre-shot soil conditions.

3 - No data useful to the NTPR.

WT-1428, Project 4.1 Effects of Nuclear Detonations on a Large Biological Specimen

Lt.Col G. M. McDonald	Lt.Col Joseph T. Goldstein
Col William H. Crosby	Maj Kent Woodward
Col Carl F. Tessmer	Maj James N. Shively
Lt.Col William H. Moncrief, Jr.	Capt Harry W. Daniell
Lt.Col Hinton J. Baker	Capt Alexander Horava
Capt Harry A. Claypool	

Walter Reed Army Institute of Research

1 - Project participated on: Lassen, Wilson, Priscilla.

2 - Pgs 24-30 gives radiobiology detail

3 - Station locations are scattered throughout the report. Free-field and internal dosimetry was performed.

4 - Substantial numbers of personnel recovered specimens from Radex areas-dressed in Rad-safe gear.

WT-1429, Project 4.2 Evaluation of Eye Protection Afforded by an Electro-mechanical Shelter

Capt. Wayne E. Gulley, USAF	Aeromedical Laboratory,
Capt. Robert D. Metcalf, USAF	Wright Patterson AFB
Maj. Mathew R. Wilson, USAF	
Capt. Jerome A. Hirsch, USAF	

1 - Project participated on Boltzman, Wilson, Priscilla, Hood, Diablo.

2 - Project personnel not subjected to radiation-nor was it measured.

WT-1430, Project 5.1 In-flight Structural Response of an HSS-1 Helicopter to a Nuclear Detonation

J.H. Walls	BuAir
N.C. Heslin	Sikorsky Aircraft Div., United Aircraft Corp.

PLUMBBOB WEAPON TEST REPORTS (CON'T)

- 1 - Project participated on Boltzman, Franklin, Wilson, Priscilla, Diablo, Kepler, Owens, Stokes.
- 2 - Report mentions no exposure of crew to radiation-nor was any ionizing radiation measured.

WT-1431, Project 5.2 Structural Response and Gas Dynamics of an Airship Exposed to a Nuclear Detonation.

D.A. Gilstad	BuAir
Christian G. Weeber	Aeronautical Structures Lab
Arnold Kviljord	U.S. Naval Material Center
Gordon W. Woods	

- 1 - Project participated on Franklin, Stokes
- 2 - Pg 62 gives distances from GZ, and were such as to receive little or no radiation. None was measured.

WT-1432, Project 5.3 In-flight Structural Response of the Model A4D-1 Aircraft to a Nuclear Detonation

J.H. Walls	Douglas Aircraft Co.
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- 1 - Project participated on Boltzman, Priscilla, Hood, Diablo, Shasta, Doppler, Smoky.
- 2 - pg.18 gives description of radiation data collection.
- 3 - pg.61 gives method used to interpret radiation data.
- 4 - pg.62 Gives radiation results for each event.

WT-1434, Project, Project 5.5 In-flight Structural Response of an F-89D Aircraft to a Nuclear Detonation

Capt. G. Stalk, USAF	Wright Air Development Center
1st LT. R.E. Gee, USAF	and Northrop Aircraft Co.
1st LT. J.P. Bednar, USAF	

- 1 - Project participated on: Boltzman, Franklin, Wilson, Priscilla, Hood, Diablo, John, Kepler, Owens, Stokes, Shasta, Doppler, Franklin, Smoky.
- 2 - Pg 15-16 Gives method of calculating radiation dose to aircrew and permitted dose to crew.
- 3 - Pg. 33 Gives table of radiation received per each of the events.

PLUMBBOB WEAPON TEST REPORTS (CON'T)

WT-1435, Project 6.1 Mine-Field Clearance by Nuclear Weapons
Capt. F.E. Deeds, USA Midwest Research Institute
Felix W. Fleming and
Robert K. Stamp U.S. Army Engineering R&D Lab.

- 1 - Project participated on Priscilla.
- 2 - No radiation measurements were made.
- 3 - pg.24 gives project layout drawing.
- 4 - Since the minefield was as close as 920ft, recovery operations could have been within the Radex field.

WT-1436, Project 6.2 Measurement of the Magnetic Component of the Electromagnetic Field Near a Nuclear Detonation.
P.H. Haas
F.N. Wimenitz Diamond Ordnance Fuse Lab.
J.C. Hoadley
J.S. Wicklund

- 1 - Project participated on: Lassen, Wilson, Priscilla, Hood, Diablo, Owens.
- 2 - Pg.28 Gives station location and range for the events.
- 3 - No radiation data were recorded.

WT-1489, Project 6.2a- Effect of a Nuclear Detonation on Semiconductor Devices.
P.H. Haas Diamond Ordnance Fuse Lab.
J.M. Schaul
W.V. Behrens

- 1 - Project participated on same events as Project 6.2.
- 2 - Pg 12 gives diagram of instrument placement and flux levels.
- 3 - Components Exposed to 4×10^{14} n/cm² and 0.1-100,000 R of gamma.

WT-1437, Project 6.3 Attenuation of Electromagnetic Radiation Through an Ionized Medium.
William S. Lee
Howard D. Krumboltz
George A. Gimber

U.S. Naval Air Development Center Johnsville, Pa.

PLUMBBOB WEAPON TEST REPORTS (CON'T)

- 1 - Project participated on: Franklin, Lassen, Wilson, Priscilla.
- 2 - Pg 17-19 gives flight track of a/c, GZ, and ground stations.
- 3 - No radiation was measured.

WT-1438, Project 6.4 Accuracy and Reliability of a Short Baseline
 Naval System.
Maj. Richard A. Houghten, USAF Air Force Cambridge Research Center
Richard B. Harvey

- 1 - Project participated on all shots but Shasta, Whitney, and Morgan.
- 2 - This was an off-site project and should not have received any ionizing radiation.

WT-1439, Project 6.5 Effects of Nuclear Detonations on Nike Hercules.
G.E. Elder Electro-Mechanical Labs, Ordnance Mission, WSMR

- 1 - Project participated on Boltzman, Franklin, Lassen, Wilson, Hood, Diablo, Kepler, Owens, Charleston.
- 2 - To study effects of neutron/gamma on H-II Guidance systems in high fluence areas.
- 3 - Pg. 14 gives layout of stations.
- 4 - Pg. 27 gives table of neutron & gamma flux at each station.
- 5 - Recovery of foils & data should have produced radiation exposure to project personnel.

WT-1440, Project 8.1 Thermal Protection of the Individual Soldier
Frank H. Babers U.S. Army Quartermaster R&E Command.
Allan J. McQuade

- 1 - Project participated on Priscilla
- 2 - Pg 17 gives station designations & expected thermal Energy levels.
- 3 - Pg 18 gives recovery & ionizing radiation levels.

WT-1441, Project 8.2 Prediction of Thermal Protection of Uniforms, and
 Thermal Effects on a Standard Reference Material.
W.H. Dirksen
T.L. Monahan Naval Material Laboratory
J. Bracciaventi
J.A. Carter
A. Hirshman

PLUMBBOB WEAPON TEST REPORTS (CON'T)

- 1 - Project participated on: Lassen, Wilson, Priscilla, Hood.
- 2 - Pg 13 gives distance of stations from GZ.
- 3 - Pg 22-24 gives thermal flux results.
- 4 - No ionizing radiation measured.

LTR 1442, Project 8.3a Performance of a High Speed Spectrographic System

William A. Plum	W.J. Parker	U.S. Naval Radiological
E.C.Y. Inn	R.J. Jenkins	Defense Laboratory

- 1 - Project participated on: Lassen, Wilson, Priscilla, Diablo, John Kepler.
- 2 - Report gives little data on instrument location-but implication is that the distance was 10 miles.

WT-1443, Project 8.3b Instrumentation for Measuring Effects Phenomena Inside the Fireball.

Charles J. Cosenza	Aircraft Lab., WADC
Richard G. Coy	University of Dayton Research Institute
Donald A. Kahle	" " " " " " " "
Thomas E. Pascoe	Allied Research Associates Inc., Boston, Ma.
Paul C. Iving	" " " " " " " "

- 1 - Project participated on Priscilla and Smoky.
- 2 - Pg. 57 Gives recovery & radiological data.

WT-1445, Project 9.1 Support Photography

Included in WT-1445-No individual report issued-No personnel listed.

Contractors-Lookout Mountain Laboratory-USAF
Edgerton, Germeshausen, & Grier, Inc.

- 1 - Project participated in all events of Plumbbob.
- 2 - Project provided technical photography on: Franklin, Lassen, Wilson, Priscilla, Hood, John, Owens, Smoky, Stokes
- 3 - Project performed documentary still & motion picture photography from manned stations on all events.

PLUMB BOB

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
AFSWC - Nuclear Radiation Received By Aircrews Firing the MB-1 Rocket	WT-1418
ASROL - Operations of the Fallout Group of Project 50.3	SRDL TR-2088
CWLR - Alpha Contamination Studies At Operations Plumb Bob and HardTack	CWLR-2385
DASA - Neutron and Gamma Radiation from Shot Laplace	WT-1541
DASA - Operational Summary	WT-1444
EROL - Solubility Characteristics of Radioactive Bomb Debris in Water and Evaluation of Selected Decontamination Procedures	EROL-1569-TR
H&N - Post-Shot Analysis For Project 3.1	HN-80-1020C
UCRL - Test Director's Report on Opn. Plumb Bob	UCRL-5166

PROMPT GAMMA RADIATION

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
NDL - Initial Gamma Data from Nuclear Weapon Tests, 1948 Through 1962.	NDL-TR-53

RADIOACTIVE CONTAMINATION

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
USAF - Preliminary Study of the Comparative Effectiveness of Atomic Weapons Under Different Burst Conditions (BUSTER-JANGLE Contamination)	USAF-OA-WP-31
AFSWC - Aircraft Contamination from Residual Stratospheric Nuclear Weapon Debris	SWC TN 59-5
AFSWC - Evaluation of Some Factors Influencing Radiation Dosage From Penetration of an Atomic Cloud by Manned Aircraft	SWC-TN-56-30
AFSWC - Radioactive Contamination of Aircraft	SWC-TN-56-26
ARDC - Radioactive Fallout from Atomic Bombs (TUMBLER-SNAPPER & UPSHOT-KNOTHOLE)	ARDC-C3-36417
CWL - Alpha Contamination Studies at Operations PLUMBB08 and HARDTACK	CWLR 2385

RADIATION MONITORING

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
Army Combat Devs. Comd - Organization for Radiological Survey, 1965-1970,	ACDC/CBRA/648
Food & Drug Admin - Measuring & Monitoring Training Exercise: Foodstuffs, Op. PLUMBB08 (includes participation)	WT-1498
LASL - Radiological Safety, Op. HARDTACK (Task unit 6, JTF)	WT-1685
Naval Med. Res. Inst - Sea-water Radiological Monitoring Methods	WT-1689

RADIATION EXPOSURE i.e. IRRADIATION

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
AEC - Operational Accidents & Radiation Exposure Within the U.S.	WASH 1192
Cinn. Univ - Radiation Effects in Man: Manifestations & Therapeutic Efforts	DNA 2751T
ERDA - Radiation Exposures for AEC & AEC Contractor Employees 1974 -	ERDA-RE
LBL - Bioassay Laboratory Report 1973 -	LBL BL
Nav. Rad. Def. Lab - Radiant Exposures from Air & Surface Nuclear Bursts	NRDL TR 69-53

RANGER

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
Program Reports - Gross Weapons Measurements, Vol 4, (includes gamma measurements Vol 4, radiological Safety)	wt-201
Program Reports - operational vol 5 (includes preliminary report on activities of rad-sage group)	wt-204
Administrative Summary Report, Vol 6,	wt-205
Report of the Deputy Test Director, vol 1, (Ranger Test Group Org)	wt-206
LASL Operation Ranger, vol 2, Handbook for Operation Ranger & Summary of test results	OR/wt-202
LASL External Neutron measurements 1946 thru 1956	wt-9004
LASL Gamma Radiation Exposure as a Function of Distance	LA-1228
LASL A Summary of Test Results, Opn. Ranger.	LAMS-1240

REDWING

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
Naval Medical Research Inst - Evaluation of Standard Navy Dosimeters ST-60/PD and IM-1071/PD in Residual Radiation Fields Abcard Ships	WT-1350
Cook Electric Co - In Flight Participation of F-84F ACFT	WT-1331
SEC - History of Task Group 7.4 in Redwing	SWC/TG 7.4/2
ORW - JTF7. Final Report of the Commander	ORW/TG 7.4/(FR)
SWC - Radiological Hazards From Contaminated ACFT	SWC SWR TM 59-4
NRDL - Characterization of Fallout	WT-1317
NRDL - Shipboard Radiological Counter Measure Methods	WT-1322
AEC - Fallout Location and Delineation By Aerial Surveys	WT-1318
LASL - Radiological Safety	WT-1366
LASL - Report of the Commander TG 7.1	WT-1359
AFSWC - Contact Radiation Hazard Associated with Aircraft Contamination by Early Cloud Penetrations	WT-1368
Cook Electric Co. - Thermal and Blast Load Effects on a B-47E Aircraft in Flight, Op. REDWING (A/C Participation)	WT-1327
McDonald Aircraft Co - F-101A Operation REDWING Effects Test (includes aircraft participation)	WADC TR 57-733
Martin Co - B-57B Operation REDWING Data (includes aircraft participation)	WADC TM 56-465
NRDL - Measurement of Thermal Radiation Incident on Naval Aircraft in Flight at Operation REDWING, PLUMBBOB, & HARDTACK	NRDL-TR-331
WADC - In-Flight Participation of B-66 Aircraft, Op. REDWING	WT-1329
ERDL - Crater Measurements	WT-1307
UCRL - Post-Operational Report-Program 22	UCRL-6283

SAMPLE COLLECTION-FALLOUT

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
Eberline - Soil Deposition; Op. ROLLER COASTER	POR-2501
Army Chem. & Rad. Labs. - Cloud Phenomena: Study of Particulate & Gaseous Matter, Op. GREENHOUSE	WT-72
Scripps Inst. Rad. - Techniques & Instruments Used for the Oceanographic Survey on Op. WIGWAM	WT-106
Isotopes - Sampling & Analysis for Gaseous Radionuclides at the NTS 1966 thru 1968	OSOTOP IWL 1300-169

SANDSTONE

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
Dept. Of AF Radiation Hazard From an Atomic Cloud	USAF/OA/WP-28
CJTF-7 Analyses of Experimental Results, Vol II,	OS/8
JTF-7 Narrative Report of Opn. Sandstone, Cdr. JTF-7	OS/1
JTF-7 Atomic Weapons Test, Enewetak Atoll, Cdr JTF-7 VOL 1, Annex, Part1	OS/2
JTF-7 Atomic Weapons Test, Enewetak Atoll, Cdr JTF-7 VOL 1, Annex 1, Part 2	OS/3
JTF-7 Atomic Weapons Test, Enewetak Atoll, Cdr JTF-7 VOL 1, Annex 1, Part 3	OS/4
JTF-7, Reports to the U.S. Atomic Energy Committee on Opn. Sandstone, Pt 1 VOL 1, Test Dir. Rpt	OS/5
JTF-7 Reports to the U.S. Atomic Energy Committee on Opn. Sandstone, Pt 1, VOL 2. Test Dir. pt	OS/6
JTF-7 Scientific Directors Report, of Atomic weapon Tests Vol 1, General Report.	OS/7
JTF-7 Sandstone Handbook of Nuclear Explosions, Vol III, Scientific Directors Report	OS/9
JTF-7 Opn. Sandstone Measurements by NRL, Annex 2, Part I, Scientific Directors Report	OS/11.
JTF-7 Opn. Sandstone Measurements by NRL, Annex 2, Part II, Scientific Directors Report	OS/12
JTF-7 Opn. Sandstone Measurements by NRL, Annex 2, Part III, Scientific Directors Report	OS/13
JTF-7 Blast Measurement Summary Report, Annex 5, Part I, Scientific Directors Report	OS/20
JTF-7 Participation by Bureau Yards&Docks, Scientific Director, Annex 6, Part II, Section 1 Scientific Directors Report	OS/25
JTF-7 Gamma Ray Measurements, Annex 8, Parts FV, Scientific Directors Report	OS/29

SANDSTONE, CONTINUED

JTF-7 Contamination Studies, Annex 9, Parts FV, Scientific Directors Report	OS/30
JTF-7 Thermal Effects & Decontamination Studies, Annex II, Parts I, II, III Scientific Directors Report	OS/32
JTF-7 Studies of Misc, Phenomena, Annex 13, Parts I, II, III Scientific Directors Report	OS/34
JTF-7 Scientific Meteorological Info., Annex 14, Scientific Directors Report	OS/35
JTF-7 General Organization w/staff Responsibilities, Annex 17, Parts II & III	OS/41
JTG 7.6 Operations phases A - E	OS/43
JTF-7 Operation Sandstone Nuclear Explosions 1948	OS/Bib.

STORAX

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
DOD - DOD Participation in BOBAC Event	VESIAC-C92 VU
DOD - DOD Participation in CAVY Event	VESIAC-C93 VU
DOD - DOD Participation in COLUMBIA Event	VESIAC-C97 VU
DOD - DOD Participation in WICHITA Event	VESIAC-C70 VU
DOD - DOD Participation in YORK Event	VESIAC-C91 VU
Pub. Health Service - Final Off-Site Report of the Project SEDAN Event	PNE-200F
REECo - The Sedan Event. On-Site Radiological Safety Report	PNE-203F
LASL - Release of Radioactivity from Los Alamos Events in Operations Nougat, Storax, & Niblick	LA-3269-MS

SUNBEAM

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
NRDL - Physicochemical and Radiochemical Analysis	POR-2216
BRL - Radiochemical Interpretation of SMALL BOY FALLOUT	BRL-1623

TEAPOT

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
AFSWC - Contact Radiation Hazard Associated with Contaminated Aircraft	WT-1122
AFSWC - Manned Penetration of Atomic Clouds	WT-1156
AFSWC - Operational Summary Report	C-9751
AEC - Gamma & Neutron Radiation Measurements	WT-1174
UNIV OF CALIF - Distribution & Characterization of Fallout and Airborne Activity from 10 to 160 Miles From GD zero	WT-1178
UNIV OF CALIF - Evaluation of the Acute Inhalation Hazard from Radioactive Fall-out Materials By Analysis of Results from Field Opns and Controlled Inhalations Studies in the Lab.	WT-1172
UNIV OF CALIF - Beta Skin-Dose Measurements by Specially Designed Film Pack Dosimeters	Wi-1178A
Edgerton, Germeshausen and Grier, Inc - Accumulated Physical Effects For NTS zero Sites.	LEX-59.15 (PT.A)
FCDA - Indoctrination and Training of Radiological Defense Personnel	WT-1165
UNIV OF CALIF - Teapot Post Operational Report-TURKTEST	WT-1211
UNIV OF CALIF - Teapot Post Operational Report-Project 21.2	UCRL-4416
UNIV OF CALIF Medical Research Inst - Radiation Energy Absorbed By Human Phantoms in a Fission Fall-out Field.	WT-1120
UNIV OF CALIF - Research Lab - Hot Spot Experiment - Apple II Preliminary Report on Operations	NRL-4556
AFSWC - FTG-SP Operations Plan 1-54 For Opn. Teapot	SWC OP-1-54
AFSWC - Report on Operation Teapot	OTP-R. 299
AFSWP - Operational & Summary, Operation Teapot	WT-1158
AFSWP - Radiological Safety	WT-1166
LASL - Report of the Test Director	LA-1966

TUMBLER

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
SWC-History of the Air Force Special Weapons Center Participation in Op. Tumbler Snapper vols 1 & 2	SWC/HIST/OTS
AFSWP-Final Summary Report - Op. Tumbler	WT-514

TUMBLER SNAPPER

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
SWC-Technical Air Operations, Op. Tumbler Snapper	WT-568
AROC-Radioactive Fall-out from Atomic Bombs-	ARDC/C3/36417
AWS-Air Weather Service Participation - Op. Tumbler Snapper	WT-506
LASL-Emissions from the Tumbler IV/Snapper 1 Tests	LA/6331/MS
LASL-Gamma Radiation Exposure as a Function of Distance Op. Tumbler Snapper	WT-
LASL-Radiation Monitoring Measurements, Op. Tumbler Snapper	WT-507
LASL-Staff Reports, Op. Tumbler Snapper (includes personnel, admin, plans & ops)	WT-553
AFSWP-Radiological Safety, Op. Tumbler Snapper	WT-558
LASL-Report of the Advisory Personnel to the Air Sampling Program	WT-556
SCEL - Gamma Ray Energy Spectrum of Residual Contamination	WT-523

UPSHOT-KNOTHOLE

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
AFCRC-Preliminary Report on Radiochemical Analysis, Op. Upshot Knothole	C-393
AFCRC-Radiation Hazards to Personnel Within an Atomic Cloud, Op. Upshot Knothole	NT-743
SWC-Aircraft Participation, Op. Upshot Knothole	WT-825
SWC-History of AFSWC Participation in Op Upshot Knothole	SWC/HIST/UK
SWC-Operational Summary, Op. Upshot Knothole	SWC-15
AFSWP-Summary Report of the Technical Director, Op. Upshot Knothole	NT-782
AMSGS-Beta-Gamma Skin Hazard in Postshot Contaminated, Op. Upshot Knothole	NT-746
CALF UNIV-Comparison & Eval of Dosimetry Methods Appl. to Gamma Radiation, Upshot Knothole	WT-802
CALF UNIV-Dist & Characteristics of Fallout at Distances Greater than 10 Mi. FM GN Zero Upshot Knothole	WT-811
CALIF UNIV-Environmental & Biological Fate of Fallout From Nuclear Detonations in Area Adjacent to the NEV PROVING GROUND Upshot Knothole	WT-812
Chemical and Radiological Labs - Protection Afforded by Smoke Screens Against Thermal Radiation Op. UK	WT-812
Chemical and Radiological Labs-Radioactive Particle Studies Inside an Aircraft Op. UK	WT-717
Fed Civil Def Admin-Eval of TDG Program For Radiological Defense Personnel Op. UK	WT-808
Radiation Lab, Univ of Calif-Preoperational RPT on Upshot Op. UK	NCRL-4011 (REV)
CALIF UNIV, Radiation Lab-Radiochemistry Results. Op. UK	WT-823
LASL - Gamma Radiation as a Function of Distance Op. UK	WT-827
LASL - Report of the Deputy Test Director Op. UK	WT-816
Naval Air Material CTR - Atomic Weapons effects on AD Type Aircraft in Flight Op. UK	wt-748

UPSHOT-KNOTHOLE (CONT)

Rand Corp-Transport and Early Detonation, of Radioactive Debris From Atomic Explosions	R-265
Signal Corps Eng Labs - Initial Gamma Exposure vs Distance Op. UK	WT-756
TAC - Indoctrination of Tactical Air CMD Air Crews in the Delivery and Effects of Atomic Wpns. Op. UK	WT-759
Wright Patterson Development CTR-Atomic Wpns Effects on B-50 Type Aircraft in Flight Op. UK	WT-749
Wright Patterson Development CTR-BLAST EFFECTS on - B-36 Type Aircraft in Flight Op. UK	WT-750
AFSWC - Air Weather SWC Participation Op. UK	WT-703
AFSWC - Project Summaries Op. UK	OUK/PS
AFSWP - Radiological Safety Operation Op. UK	WT-817
LASL - Staff Reports Part I Pers & Admin, Plans & Opns Op. U'	WT-822
AFSWP - Operations Summary Op. UK	OUK/OS
AF/AEC - Calibration Analysis of Close-in Bomb Debris Op. UK	WT-765
LASL - Activities of the Special Weather Advisory SVC Op. UK	WT-705
Signal Corps Engineering Lab - Gamma Radiation Spectrum of Residual Contamination OP. UK	WT-718
LASL - Analysis of Grable Nuclear Cloud Motions Op. UK	EGG/LAD/8566

WAHOO BURST

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
BUSHIPS - Assessment of Ship Damage (includes target ships)	WT-1632
DTMB - Loading & Response of Submarine Hulls	WT-1629
DASA - Base Surge Radioactivity from Underwater Shots (WAHOO & UMBRELLA)	DASA-533 TAR

WALNUT BURST

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
LASL - Dose Rate vs Time for WALNUT & YELLOW WOOD	LAMS-2374

WASP BURST

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
Army Signal R&D Lab - Gamma Dose Rate vs Time & Distance, Op. TEAPOT	WT-1118

WASP PRIME BURST

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
Army Signal R&D Lab - Gamma Exposure vs Distance - Op. TEAPOT	WT-1115
LASL - Gamma Radiation As a Function of Distance - Op. TEAPOT	WT-1208
NRL - Neutron Flux Measurements - Op. TEAPOT	WT-1116

WIGWAM

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
UNIV OF CALIF - Scientific Director's Summary Report	WT-1003
NRDL - Determination of Radiological Hazard to Personnel	WT-1012
NRDL - Radiological Safety for Wigwam	WT-1001
JTF-7 - Report of Commander TG-7.3	WT-1000
Naval Research Lab - Radiochemical Analysis of Wigwam Debris	WT-1010

SANDIA LABORATORIES TECHNICAL LIBRARY

<u>TITLE</u>	<u>LIBRARY LOCATION</u>
AEC - Planning Directive (NTS-21-3-63) FERRIS WHEEL - Initial Shot Series	RS-3446/7235
COMFIRSTFLT - COMFIRSTFLT Operations Order #214-62, Op. WEAPON, Sys. Test. DEEP DIVE	RS-3446/4852
HQ TASK GP 8.5 - OP PLAN 2-1-62 for Op. DOMINIC (Organization, Personnel)	RS-3446/4758
JTF-8 - OP PLAN 2-62, for Op. DOMINIC	RS-3446/2590
CJFT-7 - Administrative Plan 1-58	JTF-AP-1-58